Apartment House Cooling . . P. 22 **Balancing Big Systems . . P. 30**

AIR CONDITIONING HEATING & REFRIGERATION

NEWS

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Gov't, Industry Study World Cooling Market

By George F. Taubeneck

WASHINGTON, D. C.—Representative cross-section of air conditioning and refrigeration leaders met with U. S. Department of Commerce officials here July 6 to trade views on ways of pushing export sales.

For their part, Department of Commerce men are seeking supplemental funds from Congress to strengthen their overseas staffs.

These latter then could furnish American salesmen and manufacturers with sales leads, timely statistics, tips on new opportunities abroad, business and governmental personal contacts, etc.

Also planned are more trade missions, permanent Trade Centers (with rotating exhibits of American products) in key cities overseas, and greater participation in trade fairs.

In connection with the latter, those industry people present at the conference were advised to "SELL HARD," rather than merely show their goods diffidently.

"Take along your order books," urged Charles F. Hughett, Director of the General In-

(Continued on Page 32, Col. 3)

Crane Confirms Purchase of Miami Products

CHICAGO — Crane Co. here confirmed reports that it has purchased the assets of Miami Products, Inc., Miami, Okla., manufacturer of air conditioning equipment, heat pumps, and furnaces.

Crane plans to identify the plant as the Miami division of Crane Co. The plant will be operated as a part of Crane's Plumbing, Heating & Air Conditioning Group, which has headquarters in Johnstown, Pa.

L. K. Newell, president of Miami Products, will be general manager of the new Crane division.

Since Miami Products started operations six years ago in city-owned buildings which were part of the municipal airport, it has expanded steadily. Present plant facilities cover 90,000 sq. ft. Miami Industrial Development Corp. will build a 60,000-sq. ft. assembly plant adjacent to the present factory and lease it to Crane Co., it was reported.

* * *

Miami Products is the second company Crane has acquired since it was charged in March by the Federal Trade Commission with violating the anti-trust laws by acquiring all or

(Continued on Back Page, Col. 4)

'Nature, Extent of Warranty Must Be Clearly Given'—FTC

Agreement by Norge Clue to Gov't Attitude

WASHINGTON, D. C. — The Federal Trade Commission announced that Borg-Warner Corp. and its wholly-owned subsidiary, Norge Sales Corp., have entered into a stipulation agreement concerning warranties on their products.

The action indicates that the commission may be cracking down on warranty representations it considers violative of the provisions of the Federal Trade Commission Act.

The FTC said the companies agreed, in connection with the sale and distribution of refrigerators, freezers, or other products, not to represent that a product is warranted unless the nature and extent of the warranty and how it will be honored are clearly and conspicuously disclosed.

Also, the commission said, they must not represent that under the "Five Year Protection Plan Warranty," or any other warranty, repairs or replacement of parts will be made without cost to purchasers, when such is not a fact.

The FTC pointed out that the stipulation represents an agreement by the parties to discontinue certain practices considered by the commission to be illegal. The agreement does not constitute admissions by the parties that they have violated the law.

The stipulation notes in part that Borg-Warner manufactures, among other products, refrigerators and freezers. These refrigerators and freezers are purchased outright by Norge

(Continued on Page 33, Col. 1)

Detroit Builders Cheat Subcontractors, Associations Charge

DETROIT — Six local trade associations, including the Better Heating & Cooling Bureau, have charged that some unscrupulous building contractors are cheating subcontractors out of what may amount to millions of dollars annually.

Wayne County Prosecutor Samuel H. Olsen promised a full investigation of complaints that certain builders have filed sworn but false statements that they have discharged all their obligations to subcontractors working on homes for them.

The statements are given to mortgage companies in order to clear the property for payment after each home is finished.

The new-home buyer has a hard time getting defects corrected, it was pointed out. The builder tells him to see the subcontractor, who says that he has not been paid and thus will do no more work.

Attorney Richard Fritz, of

(Continued on Back Page, Col. 1)

Study Course Being Revised

RSES Provides 'Continuing Education,' Sees 'Fit' With ARI School Program

By Frank J. Versagi

MILWAUKEE — The three-year Study Course offered by the Refrigeration Service Engineers Society has completed its first full cycle and is moving strongly into a new, revised three-year program.

"Both the Study Course and the society as a whole have experienced increased participation," says Ralph F. Jansen, assistant educational director of RSES.

"Since 1958, membership has grown from about 9,700 to over

(Continued on Page 33, Col. 4)

ST. LOUIS—"The strength of the RSES Study Course is in its providing continuing education for a man after he has been exposed to a training course and after he has found employment in the industry. Therefore, we see the proposed ARI adult education plan as assisting and complementing the RSES program, not competing with it."

This is the reaction of John H. Spence, educational director of the Refrigeration Service En-

(Continued on Page 33, Col. 3)

Inside Dope

By GEORGE F. TAUBENECK

Learn to live and laugh — thus delay your epitaph

Midsummer Madness

You can take Khrushchev, Mao, Castro, and Kishi (or reject them) as you wish.

As for the rest of us Americans, we're more concerned about the progress of Ted Williams, Mickey Mantle, Roger Maris, and Bill Tuttle.

So, now that *two* All-Star Games have titillated us in recent days, "Dope" happily yields to the desires of his most insistent readers.

Herewith, a few new (?) baseball anecdotes.

Nuts to Car Air Conditioning

"It was a hot day," relates Joe Garagiola, "and I was riding with my boyhood pal, Yogi Berra, in his Cadillac.

"This Caddy had an air conditioning system, but he didn't turn it on. When I protested, Yogi argued:

" 'Nah, it's too hot to roll up the windows.' "

Casey Forever

For more than a week of June, 1960, N.Y. manager Stengel was hospitalized. The Yanks responded by losing to everybody.

Ashenly Casey returned, and a new winning streak began which soared his club from fifth to first place.

"That hospital routine must have done wonders," taunted a writer.

"Yep. They made pictures of my innards, and now museums are bidding for 'em."

Scout Johnny Neun signed a divinity student to a Yankee contract. That lad didn't report, however. Went to Africa as a missionary, instead.

General Manager George Weiss put his scout on the carpet about this defecture.

"It's O.K., George," deadpanned Johnny. "Maybe he will pray for us."

(Continued on Page 17, Col. 1)

Labor Contracts Signed In Milwaukee Assure Contractors More Industrial Maintenance

MILWAUKEE — Two-year labor contracts signed recently by plumber and steamfitter unions include a change sought by contractors in an effort to get more maintenance work in industrial plants.

Members of plumbers' local 75 and steamfitters' local 601 approved the change at a joint meeting.

Union sources said the locals agreed to reduce the overtime pay rate for repair and maintenance work in industrial plants on Saturdays from the present double time to time and one-half. The agreement is effective until May 31, 1961, and can be renewed if it results in more work, according to a

(Continued on Page 4, Col. 5)

Bargaining Session May Settle Strike Of N. Y. Steamfitters

NEW YORK CITY, July 14—A bargaining session scheduled to start today "held some promise" for a settlement of the strike of steamfitters which, together with a strike of sheet metal workers, has shut down installation work on large air conditioning jobs in the New York City area since July 1.

Representatives of the Mechanical Contractors Association who are negotiating with the union expressed the hope that workers would return to the job before the end of the week of July 18. Some individual contractors said that when the workers left their jobs they indicated they were "taking off" for two weeks, but the

(Continued on Page 4, Col. 5)

Mobile Association Charges Laxity In Licensing, Inspecting

MOBILE, Ala.—The Master Plumbers and Heating Dealers of Mobile, of which Hartley H. Hansen is president, has petitioned for a writ of mandamus against Chief Plumbing Inspector G. G. Goubil, Sr. and the three Mobile city commissioners.

The association claims that the city is not seeing that all persons doing plumbing work in the city are properly licensed and that work being done in the plumbing and heating field is not being properly inspected. The objective is to see that the city's health is protected, Hansen said.

The case has been set for a hearing in Judge William C. Taylor's court on July 22.

American Standard Industrial Div. Establishes 'Total' Leasing Plan

DETROIT — A new "total" leasing plan covering the complete line of American-Standard air conditioning, industrial, and power equipment products was announced by American-Standard Industrial Div.

Speaking for the division, John F. Tobin, vice president, marketing, said in explaining reasons for setting up the plan:

"Leasing has become an increasingly popular method of financing in the last decade. Leasing allows companies to acquire control over almost any kind of equipment without capital outlay on their part."

The new plan is described as "total" because it includes all types of non-expendable equipment in the full range of sizes produced by the division, whether the purchased goods be standard off-the-shelf items or a complete custom installation.

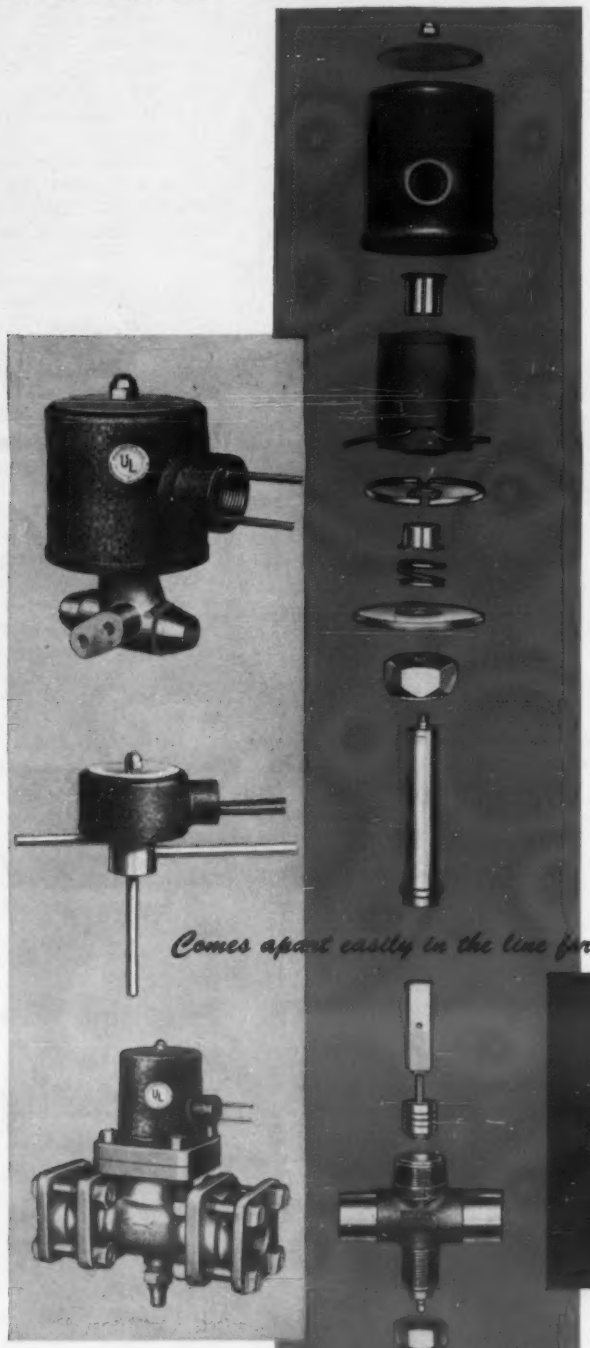
American-Standard Industrial Div. is a leading manufacturer of industrial air conditioning and air handling equipment, air pollution control equipment, fluid drives, heat transfer products, surface condensers, steel boilers, and related industrial products.

Tobin set forth seven major leasing advantages. He said leasing:

1. Frees working capital for other uses.
2. Offers a flexibility of application that can be adapted to fit specific needs.
3. Helps conserve working capital.
4. Allows expansion or modernization with equipment that often pays for itself.
5. Provides a hedge against inflation.
6. Avoids dilution of company ownership, since it eliminates the need to sell a share of the company for the required financing.
7. Enables the purchaser to apply the cost of equipment to a contract.

This leasing plan retains for the purchaser all the advantages of an outright purchase, Tobin said. Standard construction and performance guarantees are part of the Industrial Div. lease package.

Tobin pointed out that an option to buy is a standard part of the contract. Each lease is individually tailored to suit the needs and desires of the customer with regard to terms and duration of contract, he concluded.



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Dunham-Bush Names Pelton Operations V. P.

WEST HARTFORD, Conn.—Cecil Boling, president of Dunham-Bush, Inc., has announced the election of Henry V. Pelton as vice president, operations.

H. V. Pelton

Pelton will be in charge of all plant operations, including production, purchasing, and materials control, accounting, quality control, and service for all seven Dunham-Bush factories in the United States and Canada.

Pelton is leaving The Stanley Works on Aug. 1 to assume his new duties. Formerly vice president-divisional administration and a director of The Stanley Works, he was responsible for the operations of five divisions: Hardware, Steel, Stanley Building Specialties, The Stanley Works of Canada Ltd., and Stanley Steel Co. Ltd.

U. S. Supreme Court:

Housing Inspectors Don't Need To Have Search Warrants

WASHINGTON, D. C. — A Dayton ordinance requiring homeowners to admit housing inspectors without search warrants was upheld recently by the U. S. Supreme Court.

A tie vote (4 to 4) left standing the Ohio Supreme Court's rejection of an attack on the law by a man who three times in 1957 refused to admit inspectors to his home. He claimed the ordinance was unconstitutional.

The ordinance provides for "minimum standards governing utilities, facilities, and other physical things and conditions in dwellings." Homeowners may be fined $20 to $200, or imprisoned two to 30 days, for each day they refuse to admit inspectors.

Four high-court justices said they upheld the Ohio Supreme Court's ruling. A fifth justice disqualified himself from the case because of his former connection with Ohio. The other four justices held that search warrants were necessary and thus the Ohio court's finding should be reversed.

New Orleans Gets Silver Shield Story

NEW ORLEANS—Some 200 air conditioning dealer-contractors from throughout the New Orleans metropolitan area were expected to attend a meeting, scheduled for July 13 at the Public Service Auditorium, on the Silver Shield program, according to the National Warm Air Heating & Air Conditioning Association of Cleveland.

Curt L. Blair Dies

CLEVELAND—Curt L. Blair, treasurer and a director of Refrigeration Sales Corp., died recently.

Chicago Board Ok's First Cool School

CHICAGO — Preliminary plans for the first air conditioned school in the local public school system—a one-story elementary school to be erected at 85th St. and Langley Ave.—have been approved by the Board of Education.

Cost of construction is estimated at $750,000. Groundbreaking ceremonies are scheduled for early 1961.

The school will accommodate pupils from kindergarten through the sixth grade. Capacity is estimated at 720 children, based on 30 pupils per room.

Plans for the building were drawn by the architectural firm of Samuelson & Sandquist. In addition to air conditioning, features will include skylights to supplement artificial lighting, and large rooms with removable partitions to permit the use of closed circuit TV instruction and team teaching.

Student Union at U. of M. To Offer Air Conditioning

ANN ARBOR, Mich. — The Student Union building on the University of Michigan campus will offer air conditioned guest rooms for the first time this summer, according to Manager Frank C. Kuenzel.

Kuenzel said 98 of the building's 182 rooms will be equipped for cooling as well as heating in time for graduation exercises —accommodating life members and their immediate families on a first-come basis.

He said an extensive program to cool the guest rooms, University Club, and basement bowling lanes in the south wing was undertaken to stimulate business during the warm summer months.

All-season comfort is provided by equipment made by Carrier Corp. High-velocity air is sent to the 142 under-window "Weathermaster" air conditioning units, providing heating and cooling at conditions controlled by each room occupant.

Cooling will be supplied by an absorption water chilling machine. The large unit, activated by steam from the university power house, is the fifth of its kind to be installed on the university campus.

New University of S. Carolina Bldg. Set For Future Cooling

FLORENCE, S. C.—The first new building for the University of South Carolina Center at Mars Bluff near here will include provisions for complete air conditioning although actual installation of cooling equipment is not planned at present.

However, the building, an eight-classroom structure, will include an air conditioned lounge, it was explained.

. . . School Air Conditioning Plans . . .

Hillsborough County Studying Cooling for Schools

TAMPA, Fla. — The County School Board has taken the first steps toward air conditioning of Hillsborough County schools.

At a recent meeting, the board listened to representatives of the American Air Filter Co. describe various projects in Pinellas County before acceding to requests of citizens here.

A spokesman said a patron-supported plea to air condition all classrooms at Manhattan got board backing—at least to the extent that school officials were ordered to work out details with Principal Hortense Mintz and the patrons.

Plans to cool the principal's office and the library there already were in the works, M. M. Funderburk, buildings superintendent, said.

The board also agreed to provide $1,350 to hire an engineer to supervise installation of the air conditioning in the auditorium and lunchroom at Plant.

The auditorium is used as an educational television classroom by 350 students, Superintendent Crockett Farnell said. Cost of the project is estimated at $30,000 which will be paid by Dad's Club, PTA, Student Council, and other Plant booster groups.

As for future projects, the board decided to "go slow" in view of comparative costs in air conditioning some of the older school plants. However, future buildings may be designed for eventual air conditioning.

The cost of air conditioning two comparable schools, Oak Grove in Hillsborough and Pinellas Park in St. Petersburg, was shown as $8.83 and $8.80 per sq. ft. in a study made by Funderburk's assistant, Bob Pettigrew.

Cool Night School

MEMPHIS — All classrooms used by the University of Tennessee Evening school have been air conditioned for the summer session now in progress, according to an announcement.

To Air Condition Sarasota County's Oldest School

SARASOTA, Fla.—The Central Elementary school, the oldest school in use in Sarasota County, is going to be the first one to be air conditioned, according to preliminary plans approved by the school board.

Because of poor ventilation, the temperature in the old building is said to reach 92°.

It is estimated that the air conditioning phase will cost a maximum of $54,000. It will not be a duct type system, but will have individual cooling-heating units in each room.

A complete plan for renovation and air conditioning, which will make the building usable for about 10 years, is estimated at $175,000.

WHAT'S A THOUSANDTH OF AN INCH BETWEEN FRIENDS!
When our friends are also our customers (and vice versa), that thousandth of an inch can be very important!
Leading makers of air conditioning and refrigeration equipment select Viking copper tube because of its strict standards of quality: absolutely true as to roundness, uniform as to wall thickness, exact as to diameter.
The reason lies in the fact that the mandrels and dies used to draw Viking copper tube are held within extremely limited tolerances. Special machinery built by Viking keeps a constant check on these limits.
Attention to the smallest detail of fabrication produces thin-wall copper tube that is consistently superior in quality. Viking customers keep coming back — precisely because they know that to us even a *fraction* of a thousandth of an inch *does* make a difference.
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COPPER TUBE CO.
CLEVELAND 10, OHIO

Coast-to-Coast Management Institute Schedule Announced by Janitrol

COLUMBUS, Ohio — More than 1,000 Janitrol Heating & Air Conditioning "Select Dealers" are expected to attend the company's Institute of Dealer Management Forum #7 to be held in 4 cities during July and August.

The coast-to-coast schedule and dates of the one-day sessions are: Philadelphia, July 18; Boston, July 20; Rochester, July 22; Detroit, July 25; Madison, July 27; Portland, July 29; Berkeley, Aug. 1; Denver, Aug. 3; Kansas City, Aug. 5; St. Louis, Aug. 8; Dayton, Aug. 10; Pittsburgh, Aug. 11; Atlanta, Aug. 15; and Cleveland, Aug. 17.

The meetings will feature presentations by Harry C. Gurney, general sales manager; Charles C. Owen, national field sales manager; Richard E. Ireland, manager of trade advertising and sales promotion; J. Thomas Calhoon, manager of local level advertising and promotion; and Ray F. Horan, who has directed the institute since its inception in 1957.

The forums will highlight plans for selling the modernization heating market, which Janitrol officials claim will substantially exceed the new home market in 1960, reversing a many-year trend.

Janitrol, a division of Midland-Ross Corp., manufactures a complete line of residential, commercial, and industrial heating and cooling equipment.

New Code Planned For Gainesville

GAINESVILLE, Ga.—Official adoption of Gainesville's new plumbing code is expected to be brought before the city commission sometime during July.

Based primarily on the national code, Gainesville is allowing appliance men to make installations by going into existing openings so long as the soil pipe is not cut. The decision to adopt this method was taken in order not to handicap appliance dealers who said restrictions on them would injure this business.

A heating code is in the process of being prepared and will be submitted at a later date. Mostly it is modeled after the DeKalb (Metropolitan Atlanta) County code. Previously Gainesville did not have a heating code.

Reading Tube Stockholders Approve Merger with Progress Mfg. Co.

NEW YORK CITY — Merger of Reading Tube Corp. into Progress Mfg. Co., Inc., Philadelphia, was approved by stockholders of the former firm at a special meeting. Progress stockholders had approved the merger earlier.

Progress Mfg. will be the surviving company, with Reading Tube a division. Bernard F. Stolinsky, Reading Tube chairman, said he will become chairman of Progress. Ruben Rosen, currently chairman of Progress, will be vice chairman, and Maurice M. Rosen will remain chairman.

Martin Mack, Reading Tube president, will continue in that post and will become executive vice president and a director of Progress. Louis Stein, president of Food Fair Stores, also was elected a director.

Merger terms provide for the exchange of one share of Reading Tube common stock for six-tenths of a share of Progress common. Reading Tube has 730,230 common shares outstanding and Progress 870,000 shares outstanding.

New York Strike--

(Continued from Page 1, Col. 5)

contractors had the feeling that no prolonged strike was likely.

While the strike shut down work on new construction, it has not had any serious effect on installations in existing structures or on smaller jobs. Many of the smaller contractors doing such work have contracts with other unions, such as the operating engineers, and one of the leaders in this group estimates that more than 75% of the work they do is unaffected by the strike.

"Our men wouldn't cross any picket lines which the striking unions might have at new construction cites," said one such contractor, "but on the other hand the unions who are out have not attempted to interfere with the jobs which we normally handle, in which they are not generally involved."

Service work on air conditioning and refrigeration systems has not been affected by the strike, contractors report.

Movement of large equipment from distributors' and wholesalers' warehouses has dropped sharply since the strike was called, it is reported.

Milwaukee--

(Continued from Page 1, Col. 2)

union spokesman.

For several years, the Milwaukee Plumbing Contractors Association and the Heating, Piping & Air Conditioning Contractors' Milwaukee Association have been attempting to get the unions to agree to lower the Saturday factory maintenance rate to attract private contractors into more of that work.

Going on the theory that an increase in industrial maintenance work would help their own members, the unions decided to go along with the proposal this year.

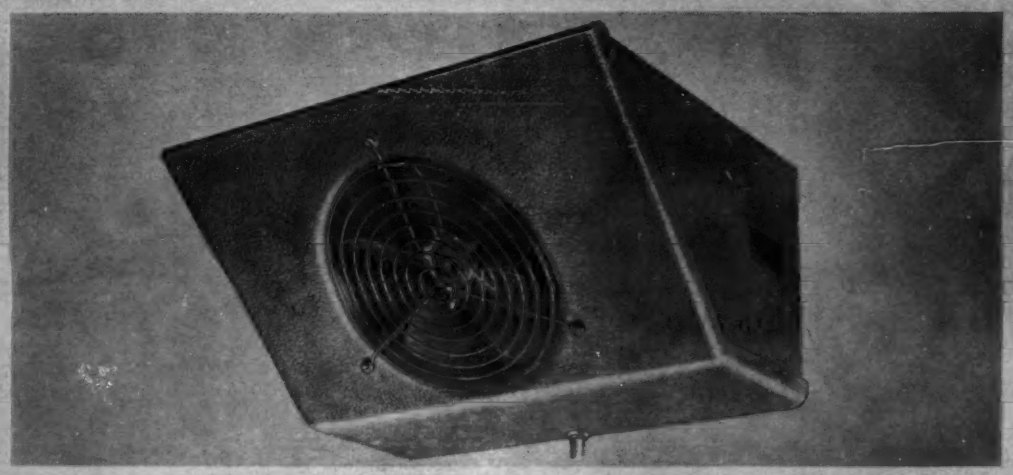
The new labor contracts cover 900 plumbers and 700 steamfitters. They follow the pattern of settlements negotiated by other building trades unions and the Allied Construction Employers Association and its affiliated contractor groups.

The contracts provide for an increase in wages and fringes retroactive to June 1 and a pay boost next year. In addition to the pay increase, the contracts call for boosts in employers' contributions into both welfare and pension funds.

NEWS readers are invited to write to the editor giving their opinions on any subject of interest to the industry.

TENNEY COOLING NEWS, HUNTING, [illegible]

BIG NEWS FROM TENNEY



THE HUSTLER IS HERE!

Powerful new line of refrigeration units for reach-ins, under-counter boxes, salad cases, beer coolers, wall dairy and beverage coolers, pastry boxes, and all comparable refrigeration installations.

Union, N. J. — Tenney's new line of Hustler unit coolers are here. Lightweight, rustproof — sleek, sturdy, silent. They can be quickly and easily installed, in all locations, with the slotted, adjustable hangers mounted on the unit. And the price is right.

Outstanding features

The Hustler features controlled directional air flow, quiet and efficient fan motor arrangements. Connections located for use on either end with knockouts. Drain fitting mounted for copper tube or hose.

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Available to all

The Hustler is available to O.E.M.'s, and also to servicemen and contractors through refrigeration wholesalers. Write for Bulletin 119-59

Check these specs!

Model	CAPACITY B.T.U./HOUR 10° T.D.	15° T.D.
H-13	1360	2040
H-17	1750	2625
H-23	2380	3570
H-30	3020	4530

Model	CIRCULATION C.F.M.	FAN DIA.	Mtr. Watts
H-13	205	8"	46
H-17	280	8"	50
H-23	320	8"	50
H-30	400	(2) 8"	90

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. . . . Labor News . . . .

New Orleans Local Ordered To End Employer Pact Requiring Union Exam

WASHINGTON, D. C.—Local 60, United Association, New Orleans, has been ordered by the National Labor Relations Board to cease giving effect to any agreement with named employers which requires applicants for employment to submit to and pass an examination conducted by the union, or which in any other unlawful manner conditions employment or retention upon clearance or approval by the union.

The NLRB said the union has agreed to comply with the order. The union was also ordered to:

1. Post all provisions relating to the functioning of the hiring arrangement.

2. Notify the individual charging party that his future referrals as a pipe fitter will be made under procedures free from unilateral administration and control by the union.

An all-party stipulation was entered into on Jan. 15 and approved by NLRB on June 15.

NLRB Examiner Recommends That Firm Keep Out of Union Affairs

WASHINGTON, D. C. — A trial examiner for the National Labor Relations Board has recommended that the board order United Sheet Metal Co., Inc., Columbus, Ohio, to stop interfering in the internal affairs of Local 98, Sheet Metal Workers, and to offer the charging party — a candidate for union office—reinstatement and back pay.

Following hearings held in Columbus last February, Trial Examiner Paul Bisgyer issued an intermediate report in which he recommended that the company cease:

1. Encouraging or discouraging adherence or membership in any group or faction of Local 98 by discharging or refusing to reinstate or in any other manner discriminating against them in regard to terms and conditions of employment.

2. Interfering in the internal affairs of Local 98 by preparing and circulating among its employe members petitions and other election campaign material urging the election of any person to an office in that local, by soliciting employe-members to sign such a petition, by securing the assistance of employe-members to circulate the petition and other election campaign material, and by engaging in other electioneering activities on behalf of any candidate for union office.

3. In any other like manner interfering with, restraining, or coercing employes in their right to self-organization.

The trial examiner also recommended that the company offer reinstatement and back pay to the charging party, who was the opposing candidate for union office.

Canadian Board Finds Applicant Inappropriate For Certification as Bargaining Unit

OTTAWA, Ont., Can. — Hon. Michael Starr, Minister of Labour, announced that the Canada Labour Relations Board had rejected an application for certification as bargaining agent which was made by the National Union of Operating Engineers of Canada, Local 14-850, District 50, United Mine Workers of America, for stationary engineers and air conditioning operators of the Canadian Broadcasting Corp. in Montreal.

The application was rejected for the reason that the unit as applied for was not, in the opinion of the board, appropriate for collective bargaining.

The application was contested by the Association of Radio & Television Employes of Canada, which holds a collective agreement covering approximately 50 building service employes of the corporation at various locations in Canada, including the nine stationary engineers and air conditioning operators involved in this application.

Examiner Asks Dismissal of Arizona Case

WASHINGTON, D. C.—In a case involving complaints against plumbers', painters,' and carpenters' unions in Tucson, Ariz., a trial examiner for the National Labor Relations Board has recommended dismissal of the complaint against United Association Local 741 on the ground that its picketing of a plumbing subcontractor was informational only.

In his intermediate report on the case, Trial Examiner William E. Spencer found that the picket sign and letters written to the plumbing subcontractor represented attempts to persuade him to pay the union scale, and did not constitute attempts to force him to recognize and bargain with Local 741, or to force his employes to accept or select Local 741 as their bargaining agent.

Spencer raised the presumption, the NLRB pointed out, that the picketing was for a lawful purpose.

Such a presumption is justified, he said, because "there is no more reason, based on experience, to presume, because of the naked fact of the picketing itself, an unlawful object than there is to presume a lawful one, and therefore the assumption that one acts in a lawful manner until the contrary is proved must prevail."

He concluded that the evidence of unlawful purpose is insufficient to overcome the presumption.

At the same time, Spencer found that Local 857, United Brotherhood of Carpenters, and Local 596, Brotherhood of Painters, have induced employes of the carpentry and painting subcontractors respectively to engage in a work stoppage, in order to cause the subcontractors to put pressure on the general contractor to cease doing business with the plumbing subcontractor.

Spencer recommended that the Carpenters' local cease such conduct, but made no similar recommendation concerning the Painters, since their stoppage ended within hours after it started.

Charges in the case were filed by the Independent Contractors Association. A hearing was held at Tucson in April.

Freeman Replaces Ziegenhagen In Worthington Post

HARRISON, N. J.—C. Freeman's appointment as manager, advertising and sales promotion of Worthington Corp., was announced by T. J. Kehane, vice president-marketing.

He replaces M. E. Ziegenhagen, who has resigned to accept another promotional management position. Freeman had been account manager for the company's engineered products divisions since 1955.

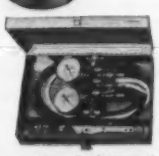
MADDEN *Preferred by* SERVICEMEN EVERYWHERE

MADDEN
Tube Piercing Valves

1 Valve for 4 Tube Sizes—3/16", 1/4", 5/16", and 3/8".

HP-41 Patented

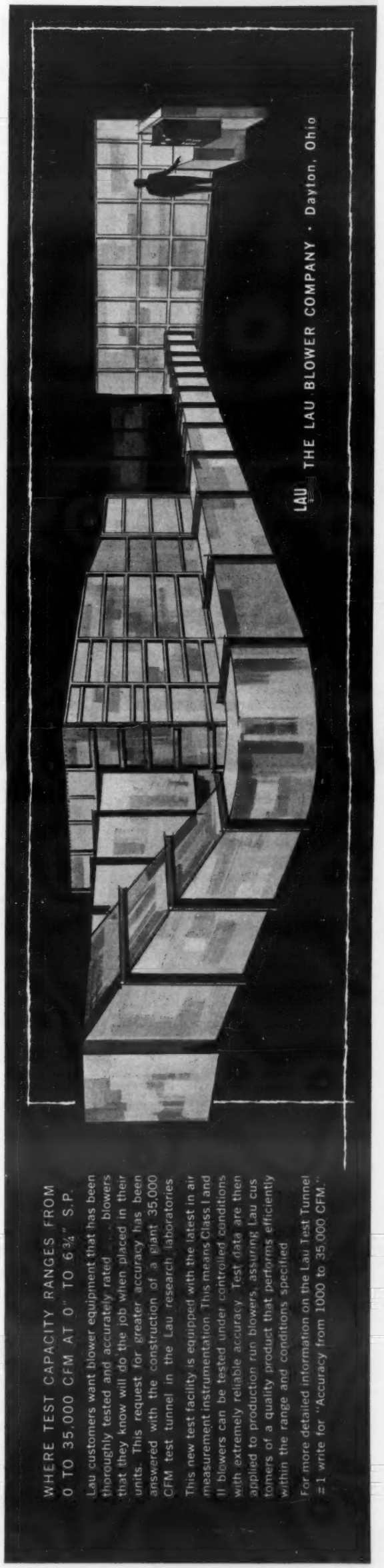
HP-41A Patented
New Tamper-proof style has Allen wrench head.


CHARGING AND TESTING UNIT IN METAL BOX includes gauges, manifold bar, hand wheels, hanging hook, hose holder, and one set of Madden color coded charging lines.

Write for New Refrigeration and Air Conditioning Catalog No. R460.

MADDEN BRASS PRODUCTS COMPANY
AURORA 6, ILLINOIS, U.S.A.
EXPORT: Ad Auriema 85 Broad St., New York, N. Y.

STEP FORWARD WITH LAU



WHERE TEST CAPACITY RANGES FROM 0 TO 35,000 CFM AT 0" TO 6¾" S.P.

Lau customers want blower equipment that has been thoroughly tested and accurately rated ... blowers that they know will do the job when placed in their units. This request for greater accuracy has been answered with the construction of a giant 35,000 CFM test tunnel in the Lau research laboratories.

This new test facility is equipped with the latest in air measurement instrumentation. This means Class I and II blowers can be tested under controlled conditions with extremely reliable accuracy. Test data are then applied to production run blowers, assuring Lau customers of a quality product that performs efficiently within the range and conditions specified.

For more detailed information on the Lau Test Tunnel #1 write for "Accuracy from 1000 to 35,000 CFM."

Excessive Use of Plastics, Need of Costly Replacement Rather Than Repair Scored at ASHRAE Refrigerator Conference

VANCOUVER, B. C., Can.—"Engineering cannot be divorced from sales."

"I wish servicemen were better trained."

"You are using too much plastic in your refrigerators."

From a charming lady topped with one of those ridiculously pretty flower garden hats came this sharp criticism of current domestic refrigerator design and performance at a symposium held during the recent 67th annual meeting of American Society of Heating, Refrigerating & Air-Conditioning Engineers.

Keynote speaker for the conference was Mrs. Virginia Thabet Habeeb, home equipment editor of *American Home Magazine*.

"While the housewife wants her appliance to keep the various foods at the proper temperature, she is not particularly concerned with actual temperature measurement," stated Mrs. Habeeb who based her comments on over 400 subscriber questionnaires which were processed especially for her talk to ASHRAE.

Will It Freeze, or Just Store Frozen Foods?

"On the other hand, she would greatly appreciate knowing whether her 'freezer compartment' is truly a freezer which will freeze fresh food or whether it is a frozen food storage compartment. We think a nameplate or tag somewhere in the cabinet giving this information is mandatory."

The lady editor also called to task that portion of advertising which seems engineer-dominated but frequently misses the mark.

"So much advertising shows the new frostless refrigerators saving the poor housewife from carrying pans of hot water and toiling to defrost the *food compartment* when in truth no food compartment ever needed defrosting in that sense." While most of her respondents liked the new frostless boxes, several complained that the defrost system sometimes caused inconvenience—as when it re-froze water around cartons, and in drip trays.

"Leftovers don't seem to last as long in the frostless boxes," she commented.

Mrs. Habeeb said there is almost universal agreement that plastic is being used excessively in modern refrigerators.

"I know that manufacturing costs are frequently the deciding factor, but consider the cost of service and in customer ill will. Give us less plastic on doors, crispers, baffle plates—those areas which catch the greatest abuse. Plastics also tend to gather dust and get dirtier than other materials."

Despite some objection from the floor, Mrs. Habeeb was joined by two other speakers who cast a dubious eye on "excessive and poorly engineered applications" of plastic.

E. V. Sutin, of Walter Dorwin Teague Associates, Seattle, speaking on styling for household refrigeration appliances, stated, "Plastics are frequently attached in such a manner as to make them inaccessible for convenient repair. A woman leaves a shelf out and attempts to close the door, for example. She pierces the plastic door liner. Because the liner is not liable to easy access and repair, the entire assembly must be replaced."

D. C. King, in charge of light industrial section of Canadian Standards Association, Toronto, stressed that "plastic technology is moving so fast that standard agencies cannot keep abreast of the changes. From the safety viewpoint, we are concerned that many of the plastic materials support combustion. We are trying to mark time on such items as foamed are under pressure to establish insulation, for example, but we standards soon," King said.

During the symposium, G. H. Pope, managing engineer, casualty and automotive department, Underwriters' Laboratories, Inc., Chicago, reviewed UL standards on domestic refrigerators and freezers. "The chief purpose for establishing such standards is to protect the public from fire hazards, electrical shock, or other injuries," Pope explained.

A general discussion of the relative roles of UL and CSA brought out the fact that CSA is the testing facility for Canada's Provincial Inspection Authority, while UL is a private organization.

"CSA attempts to follow or coincide with UL requirements, but this is not always possible

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MOTORS
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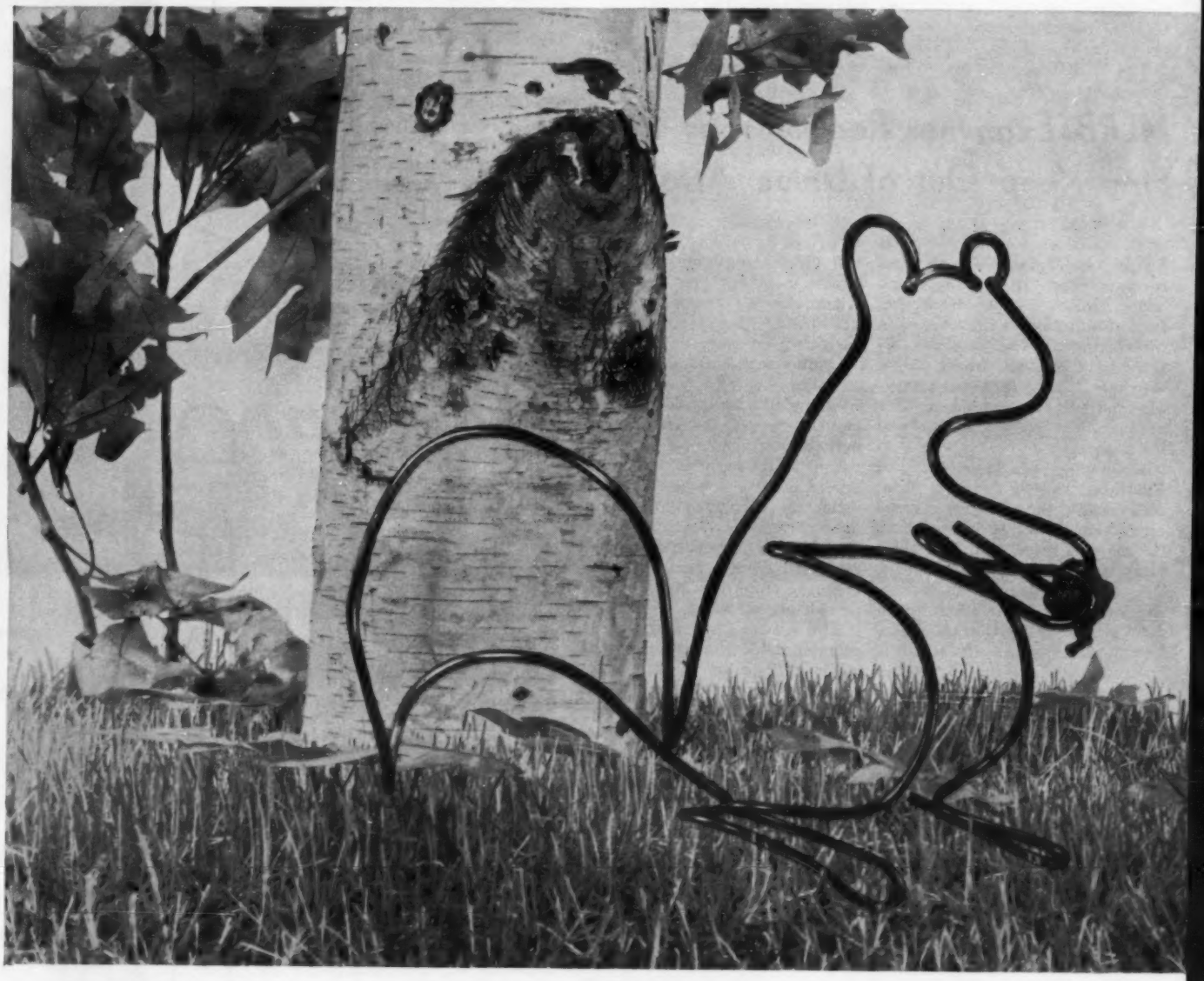
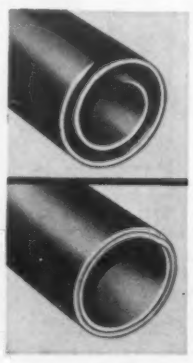
OGDEN AT FULTON CHICAGO 7, ILL.



There's almost no limit to the things Bundy can mass-fabricate



Bundyweld is the only tubing double-walled from a single copper-plated *steel* strip, metallurgically bonded through 360° of wall contact for amazing strength, versatility.

Bundyweld is lightweight, uniformly smooth, easily fabricated. It's remarkably resistant to vibration fatigue; has unusually high bursting strength. Sizes up to ½" O.D.

Maybe your tubing problems don't run to animal shapes, but it's likely that you can benefit from Bundy's experience in mass-fabricating complex tubing parts. Here's why:

Precision bending: Bundy-developed machines turn out parts to exacting customer specifications . . . *with mass-fabricating savings.*

Great strength: Your component will be fabricated from Bundyweld®, the copper-brazed steel tubing that's *double-walled* from a single steel strip. Bundyweld's long history of leakproof performance has made it the safety standard of the refrigeration industry.

Expert design service: You can call on our engineering staff at any time to help with the design of your product. We may be able to point out short cuts that save you money without compromising engineering standards. Covered by Government Spec. MIL-T-3520, Type III.

Next time you have a tubing problem, better call Bundy *first*. Phone, write, or call Bundy Tubing Company, Detroit 14, Michigan.

from our viewpoint," King explained.

Pope described some considerations which sometimes make it impossible for UL to process equipment as rapidly as might be desired; he warned against coming in late with a seasonal item and hoping to get it listed quickly.

Asked if UL had any thoughts on the possible use of resin bonded joints in refrigerators, Pope stated, "We have not as yet been approached on the subject," and he stressed that UL only takes action when they have been "approached."

Other points made by the speakers:

Sutin: "Design and engineering have an obligation to provide reliable performance because units have become so complex that homeowners cannot attempt self-repair."

Mrs. Habeeb: "If we need escutcheons, make them easily cleanable. But we don't wear labels on our dresses; why do we need them on appliances?"

"Pope: "So far as I know, no one has attempted to have us list 250-volt household appliances."

King: "Manufacturers of wire and cable are constantly seeking approval for many types of thermoplastic insulated materials; our provincial inspectors are pleading for a reduction in the types of approved materials.

"The Provincial Inspection Authority is considering the use of 3-wire cord for grounding domestic appliances."

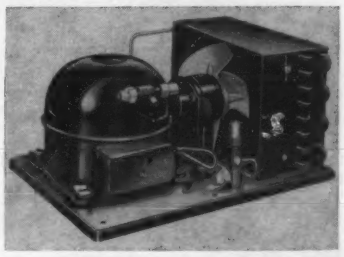
Controls Co. Dividend

SCHILLER PARK, Ill. — Directors of Controls Co. of America declared a dividend of 20 cents a share on the company's common stock.

Tecumseh Introduces 7 Space-Saving Fractional Hp. Condensing Units

TECUMSEH, Mich. — Seven new fractional horsepower condensing units, first in a line which will employ recently developed, space-saving condenser design, are being introduced by Tecumseh Products Co.

These seven T-Line units are uniform in height and width, measuring only 8⅞ in. and 13 in. respectively. The ⅓-hp. model is one inch longer at 19⅜ in., than the balance of the units. The smaller over-all dimensions will permit manufacturers to standardize on a single, smaller machine compartment size for that part of their product lines which are covered in this initial ⅙ through ⅓-hp. range, states the manufacturer.



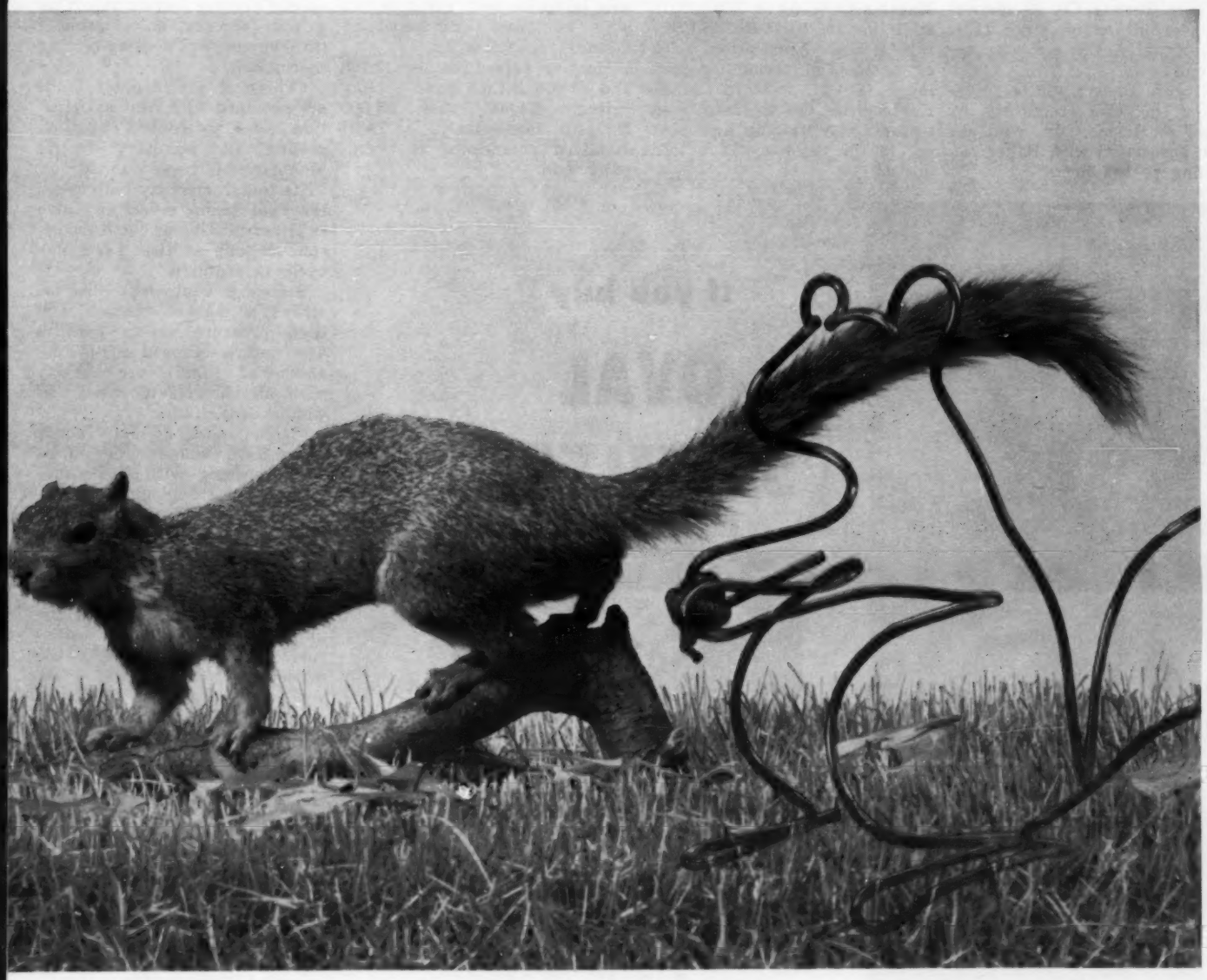
TECUMSEH'S "Free-Flo" fin design, which has only three to the inch, is cited as major factor in developing new T-Line units, which are said to provide greater capacity in less space.

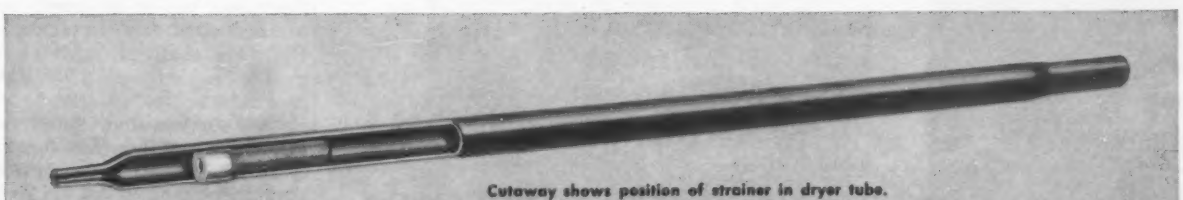
Reduction in size has been accomplished primarily through what can be termed an evolutionary development in basic condenser design. A smaller condenser with virtually the same efficiency, has been made possible by wider fin spacing, it was stated. Insteal of the usual six-fin-per-inch construction, Tecumseh's "Free-Flo" fin design has only three to the inch.

Efficiency is maintained by less restricted air circulation and reduced tendency for dust accumulation and subsequent clogging. A substantially heavier (.022-.025 in.) gauge steel has been used in the construction to give better heat transfer and at the same time give additional strength to the individual fins.

Other features in the new T-Line condensing units are contained in compressor mounting technique. Four rubber grommets isolate the compressor from the base, eliminating vibration and muffling most attendent noise. Also, holdown clips have been provided for faster compressor installation.

Capacities of the five low temperature models range from 680 to 1,450 B.t.u. and from 2,000 to 2,950 B.t.u. in the high temperature units.





Cutaway shows position of strainer in dryer tube.

"11 inches of life insurance" . . . that's how Hotpoint describes this refrigeration dryer tube. Filled with synthetic zeolite, it absorbs the slightest trace of moisture to protect the refrigeration system from failure. The tube is made from ⅜" O.D. x .028 Bundyweld. One end is reduced slightly for silver soldering, while the other is reduced to .080 I.D. in less than ⅝".

There's no substitute for the original

BUNDYWELD® TUBING

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NEWS readers are invited to write to the editor giving their opinions on any subject of interest to the industry.

Taco Heaters Names P. L. Quattrochi

CRANSTON, R. I.—Appointment of Peter L. Quattrochi as general sales manager has been announced by Taco Heaters, Inc. here.

Quattrochi

Quattrochi will be responsible for total national sales activities including customer service, national accounts, original equipment manufacturers, advertising sales promotion, and sales offices. Quattrochi was formerly Taco's manager of field sales and services and previous to that had been customer services manager.

He was graduated from Massachusetts Institute of Technology in 1947.

Cooling Permits Up In Shreveport

SHREVEPORT, La.—During June, the city's Air Conditioning Dept. issued 159 permits for installations costing a total of $292,341, according to Clyde Juneau, air conditioning inspector.

This compares with 151 permits issued in May for installations costing $281,512. Number of inspections and surveys for June was 324, against 314 in May.

June permits were broken down as follows:

Residential: Year-round air conditioning and heating, 40; air conditioning, 14; heating, 62; replacements, 6.

Commercial: Year-round air conditioning and heating, 13; air conditioning, 5; heating, none; replacements, two.

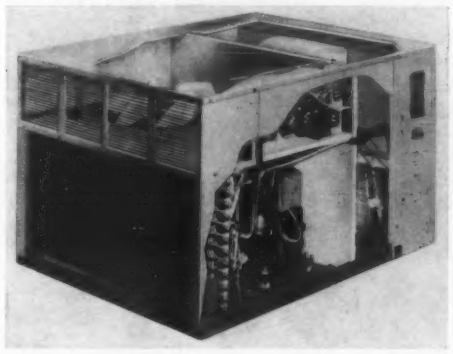
Alterations and/or additions: 9. Refrigeration: 8.

Largest commercial permit of June was issued to Fitzgerald Plumbing Co. for a $38,122 installation for First Federal Savings & Loan Association. Largest residential permit, amounting to $7,011, went to Climate Engineering Co. to install central air conditioning and heating in the residence of a local doctor.

Nicholas L. Baker Dies

BUFFALO — Nicholas L. Baker, who has represented Niagara Blower Co. as district engineer in Detroit since 1928, died recently, the company reported.

Niagara Blower will be represented in that territory by Ansel F. Hosmer, Jr., who has been associated with Baker, according to the firm.



CUTAWAY view of new Lennox hermetic heat pump, which is available in two sizes. Feature of the unit is special control involving a four-mercury bulb, automatic changeover heating-cooling thermostat.

Lennox Announces Hermetic Heat Pump

MARSHALLTOWN, Iowa—A new hermetic heat pump in two sizes has been announced by Lennox Industries, Inc.

Heating capacities are 22,200 and 38,000 B.t.u.h., and cooling ratings 23,000 and 35,000 B.t.u.h., respectively, at ARI standard conditions, the company said.

The manufacturer points to a special control feature involving a four-mercury bulb, automatic changeover heating-cooling thermostat.

"Three of the mercury bulbs are provided with heat anticipation coils to control heating, cooling, and auxiliary electric heat cycles," it was pointed out. "The fourth mercury bulb keeps the heat pump reversing valve in either heating or cooling position as long as that particular cycle is required."

Standard equipment also includes a defrost control, and high pressure safety control. The unit is shipped completely assembled and pre-charged, with all controls mounted and wiring connected.

"Both outdoor and indoor coils have four-row seamless copper tubing with the standard Lennox ripple-fin, flat bonded for better heat transfer," it was stated. "Air for both coils is pulled through the coil, turned 180°, and discharged in the opposite direction of entry. This permits installation of the unit completely within a structure, with only the face of the outdoor coil exposed.

"The compressor is resiliently mounted, suction cooled and has accessible gauge ports. It is covered by a five-year warranty.

"Cabinet construction follows standard Lennox practice, using 'Fiberglas'-lined heavy gauge steel, zinc-coated with baked-on thermo-setting acrylic enamel. The units are factory-tested and are U.L. listed.

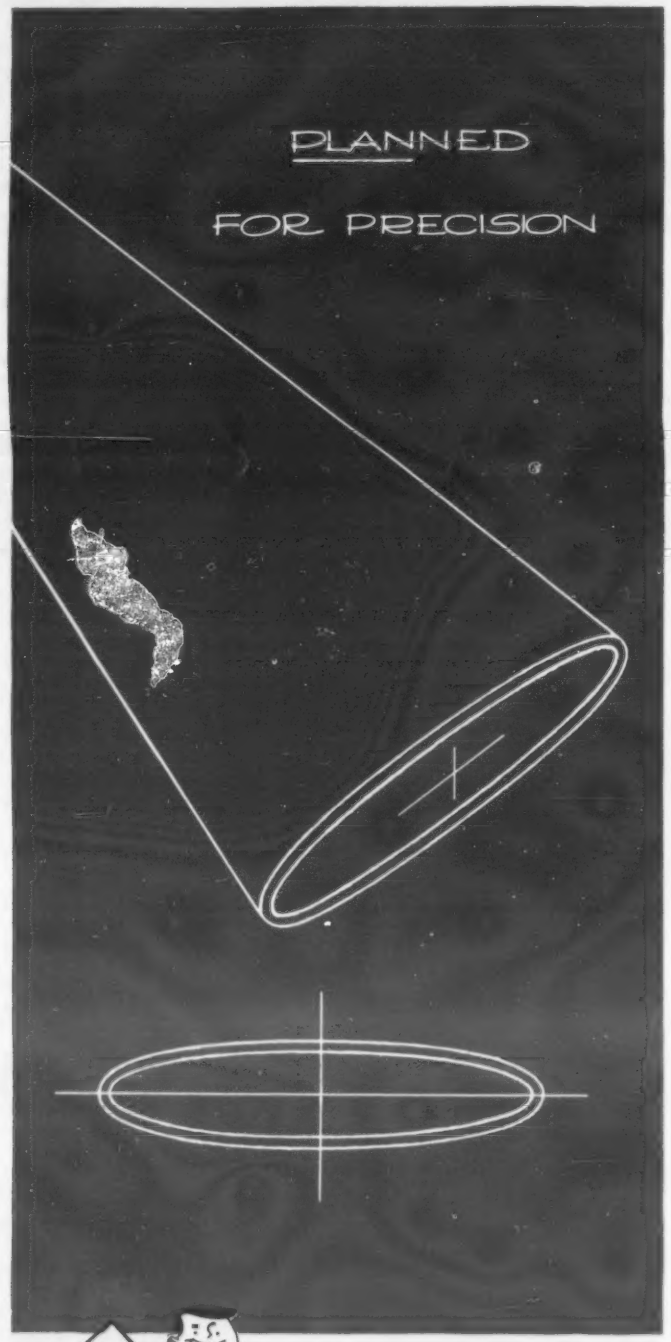
"Air for the indoor coil is furnished by a resiliently mounted blower which is direct-driven in the smaller unit and belt-driven in the larger. Outdoor coil air is supplied by a vertical shaft fan, direct driven. Both are equipped with permanently sealed and lubricated bearings.

"A combination filter and electric resistance heating section is available as optional equipment, adding up to 26,000 B.t.u.h. for the smaller unit and up to 39,000 B.t.u.h. for the larger."

Wesley R. Becher Dies

HARTFORD, Conn. — Wesley R. Becher, chairman of the board of Radiant Baseboard Panels, Inc., Newington, Conn., died here recently. Becher founded the company in 1949 and served as president until 1959 at which time he assumed the chairmanship.

NEWS readers are invited to write to the editor giving their opinions on any subject of interest to the industry.



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National-Union, Eureka Williams Merger OK'd

WILMINGTON Del.,— Stockholders of National Union Electric Corp. approved the merger of Eureka Williams Corp. with their company at a special meeting held here recently, it was announced by C. Russell Feldmann, chairman of the board and president of National Union Electric.

Stockholders of Eureka Williams approved the merger in May.

Present officers and directors of National Union Electric will continue in their positions and the present executives of Eureka Williams will continue to manage Eureka as a division of National Union Electric, it was stated.

The merger "will result in a strengthened corporation with a diversified line of products and will provide additional financial and managerial resources which will promote our company's growth," Feldmann commented.

National Union Electric, which will be the surviving corporation of the merger, manufactures furnaces and air conditioners in its Armstrong Furnace Div. at Columbus, Ohio, and special purpose electron tubes in its Electronics Div. at Bloomington, Ill.

Eureka Williams, which is celebrating its 50th anniversary this year, manufactures Williams Oil-O-Matic oil burners, Eureka Williams vacuum cleaners, school furniture, aircraft generators, starters, and inverters, hydraulic motors, and thermal batteries at plants in Bloomington and Canastota, N. Y.

This spring it introduced the Henney Kilowatt, an electric automobile which is being initially produced for the use of public utility companies.

Under the terms of the merger, each of the 278,700 outstanding shares of Eureka Williams will be converted into 15.77 shares of National Union Electric common stock.

Authorized shares of National Union Electric will be increased from 4,000,000 to 7,500,000, and after the merger there will be outstanding 5,747,585 shares.

Feldman stated that the excess of authorized over issued shares "will put National Union Electric in a position to consider the acquisition of other businesses where an exchange of stock would prove attractive to potential sellers."

Eureka Williams presently owns 394,800 shares of National Union Electric which will be cancelled upon completion of the merger.

Marsh Promotes Hayden

SKOKIE, Ill.—Marsh Instrument Co., division of Colorado Oil & Gas Corp., announced the promotion of Dan Hayden to office manager.

Hayden has been with Marsh for ten years, the last four of which were spent in the personnel department.

New Air Conditioned Tenney Plant Dedicated by Governor Hodges

GOV. LUTHER H. HODGES, of North Carolina, (left), congratulates Monroe Seligman, president of Tenney Engineering, Inc., Union, N. J., during dedication ceremonies for the firm's new plant at Wilmington, N. C.

WILMINGTON, N. C. — The brand new plant of Tenney Engineering, Inc.'s refrigeration, heating, and air conditioning products division was dedicated here June 21 by Gov. Luther H. Hodges of North Carolina at ceremonies attended by more than 350 persons.

Rain forced the dedication indoors, but a corner of the shipping area of the 75,000-sq. ft. facility had been cleared for such an eventuality. The audience did not mind, because the entire building, constructed of pre-stressed concrete sections, is air conditioned.

After Gov. Hodges had unveiled a plaque to commemorate the event, dignitaries, leading Wilmington area businessmen, and families of employes toured the plant.

Monroe Seligman, president of Tenney, said the plant reflects a major expansion move which will make Tenney "a dominant factor" in the refrigeration, heating, and air conditioning industry.

Other Tenney officers at the dedication were Saul S. Schiffman, chairman of the the board of directors; Sid Shapiro, vice president in charge of the refrigeration, heating, and air conditioning products division, and Robert H. Brown, vice president of the firm's environmental test chamber division.

Noting that the new plant has been in production for several months, Shapiro told the audience that its products are widely used by original equipment manufacturers for commercial and industrial applications, household heating and cooling, and in auto air conditioners.

The plant, which is expected ultimately to employ 250 to 300 persons, is situated on an 11-acre tract.

Tenney last year acquired the copper and aluminum coil division of The Kirsch Co., and this has been consolidated at the Wilmington plant. At the time, it was announced that the acquisition would permit widening the Tenney line to include ⅜, ½, and ⅝-in. sizes in a wide variety of finned tube combinations "to fit virtually every OEM application."

NOW...

907—QUARTER BEND (90°)
copper to copper
1¼, 1½, 2, 3, 4

907-2—QUARTER BEND (90°)
copper to fitting
1¼, 1½, 2, 3, 4

908—EIGHTH BEND (45°)
copper to copper
1¼, 1½, 2, 3, 4

908-2—EIGHTH BEND (45°)
copper to fitting
1¼, 1½, 2, 3, 4

901—COUPLING
copper to copper
1¼, 1½, 2, 3, 4

923—ROOF VENT INCREASER
3 x 4 x 18, 3 x 4 x 24, 3 x 4 x 30

These new "jewel box" installation additions to the NIBCO represent another engineering first . . . to further increase the value of copper plumbing.

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Wins a Wagon

GABE MARIN, president of Sun-Ray Oil Burner Mfg. Co., Jamaica, N. Y., receives keys to working replica of a 1901 Oldsmobile from Arnold Michelson, Minneapolis-Honeywell vice president. Seated with Marin in the "Olds" is his wife, Doris. Marin won the car in Honeywell's "Win-A-Wagon" contest by most accurately guessing the number of times a torture-test model of the new Honeywell R478 electronic flame safeguard would cycle before it was arbitrarily stopped.

Under AGA Auspicies

Gas Heat Costs Less To Install, Operate 'Functionally Identical' School Study Says

NEW YORK CITY — Summarizing a comparative study of two "functionally identical" schools in Angola, N. Y., by the University of Buffalo, the American Gas Association says an economic analysis of gas and electric heating systems shows gas cost less to install and operate.

The Angola project was initiated by the Iroquois Gas Co., Buffalo, and conducted under the auspices of AGA's Committee on Comparison of Competitive Services.

The study was directed for the university by Prof. Paul E. Mohn of the School of Engineering. The university undertook the study as a public service project because it felt the information which could be obtained would be of great importance to school planners and administrators, AGA said.

The Angola schools, both new, are located five miles apart near Lake Erie. One is heated by a gas-fired, forced circulation hot water system and the other by electric unit ventilators. Each school was operated in its normal manner for the 1958-59 academic year. The heating season totaled 6,859 degree days.

"Although the buildings are functionally identical as schools, considerable differences exist in heating load requirements and weekly use schedules," Prof. Mohn said. The gas school was higher in both cases, it was stated.

Prof. Mohn's report notes that temperature at the electric school was set back to 50° at night and over weekends, while the temperature was turned back to 60° at the gas school.

He also pointed out that while both schools were used for non-academic purposes after regular class hours, weekly use of the gas school was 30% greater than the electric school.

Extra uses of the gas school included performance of janitorial services on Saturday mornings and the weekly basketball games. Non-scholastic activities common to both schools included PTA meetings and open house programs.

Despite these factors, which led to increased fuel usage in the gas-heated school, the annual costs of heating the gas school were less than half those of the electrically-heated school—$3,008 compared with $6,140, the AGA said.

"The generally held view that gas heating systems are less expensive to install was again shown to be true," AGA said in its summary. Data from the school board's records indicate initial costs of the gas heating system were approximately $6,500 less than the electric system — $138,790 compared with $145,291.

Prof. Mohn's investigation included examination of pupil attendance records at both schools to determine whether different heating methods affected absence rates. Terming the difference in absence rates "insignificant," he added that "this difference cannot be traced or attributed to the use of a particular fuel or energy source."

The full report is on file and open for inspection at the association's headquarters, 420 Lexington Ave., New York City. Copies of the summary, "Gas and Electric Heating in Two Schools at Angola, New York: School Year 1958-1959" (Cat. No. 25a/U) are available from AGA at 15 cents each. Presentation copies on heavier stock (Cat. No. 25b/U) are priced at 25 cents each.

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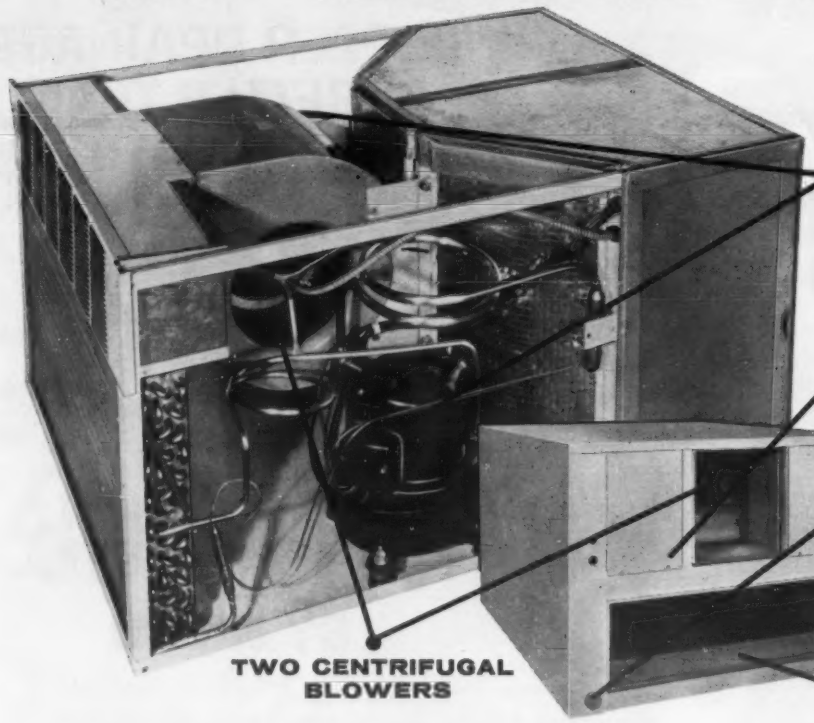

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Please send complete information on Coolerator Central Air Conditioners and the Bonus Profit Plan.

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OHI Sponsoring Service Schools For Local Chapters

CHARLOTTE, N. C. — Oil heating technicians and servicemen are attending a special course sponsored by the Distribution and Manufacturer divisions of the Oil Heat Institute of America and being held here.

The course will run for three weeks meeting two nights a week. It began June 30.

Subjects covered in the curriculum include: application of fuel oils to domestic oil burners; nozzles and nozzle servicing; oil burner pumps; combustion instruments, testing, and draft; and domestic oil burner controls and control systems.

Similar courses have been held in other parts of the country by OHI chapters. These service schools are made available by OHI to any of its member chapters.

At least four weeks advance notice is required by OHI headquarters from the group requesting the course. A small registration fee per student is the only charge, provided the local chapter arranges for a location for the classes and guarantees at least 35 students.

Many manufacturer members of OHI have participated in the planning and execution of the school curricula and representatives of these firms lecture at the classes without compensation, it was noted.

Airtemp Initiates Twofold Management Training Program for Sales Department

DAYTON — Airtemp Div. of Chrysler Corp. has announced the initiation of a twofold management training program for its sales department.

According to Vice President of Sales Joseph B. Ogden, the program is designed to provide a reservoir of capable, trained management for either vacancies in, or expansion of, the sales department.

"We have operated trainee programs for other areas at Chrysler Airtemp, but this is the first program specifically drafted for management jobs in the sales department," Ogden announced.

Three trainees will comprise one part of the new program and six employes already in the sales department will account for the second part of the training.

The trio's one-year training program will involve 13 weeks each in business and market research, sales administration, Chrysler branch operations, and sales training.

Ogden said the completion of this schedule "does not mark the end of the training program, but it is the first step in the education necessary for the development of the quality of Sales Dept. personnel required by Chrysler Airtemp."

The program's second section will offer training opportunities to current sales employes who aspire to executive sales positions.

Interested individuals will be interviewed and then given aptitude tests. Six men will be chosen from among the applicants for the first year's management training program which begins this month.

These employes will spend one week during the year becoming acquainted with key sales departments. They are room air conditioner sales, packaged heating and cooling sales, sales administration, advertising and sales promotion, business and market research, service and parts, and branch operations.

As nearly as possible, there will be six or eight-week intervals between each training session for current employes.

72 Wholesaler Executives Complete Management Course at Ohio State

WASHINGTON, D. C.— Seventy-two wholesale executives, representing 22 major wholesale commodity lines, recently completed an intensive week of study in the ninth successive annual wholesale executive management course on the Ohio State university campus.

A week later, 49 wholesalers from 15 major commodity lines completed a similar course at the Wharton School of Finance & Commerce at the University of Pennsylvania. The course also will be given at Stanford university in California Sept. 11-17.

Over 170 of the nation's wholesalers will complete this year's course, according to the sponsoring National Association of Wholesalers. The rigid schedule for the course starts at 8:30 a.m. and runs through to 5:15 p.m. daily and includes evening-long wholesale operating case studies on four nights.

Associations represented in the course this year include the Air Conditioning & Refrigeration Wholesalers.

Among those taking the course were, at Ohio State, C. V. Hale, Noland Co., Inc., Newport News, Va., and Elmer K. Peterson, Thermal Supply, Houston, Texas; at Wharton School of Finance & Commerce, John A. Hall, Salisbury, Md., and William Thomas, Baltimore, both of Roche & Hull, Inc., and Harvey J. Sharp and Edward Booth of Refrigeration Supply Co., Richmond, Va.

Whirlpool Expanding Management Training For Distributors

ST. JOSEPH, Mich.—Formation of a new department to carry on and expand Whirlpool Corp.'s management and operations training for wholesale distributor personnel was announced by Jack D. Sparks, vice president of the RCA Whirlpool appliance sales department.

"Establishment of this new department formalizes a program first begun as a series of distributor management seminars in early 1959 and emphasizes once more our conviction that Whirlpool's health depends in large degree on the health of the distributors and dealers who are its marketing partners," Sparks said.

He said that the success of the distributor management seminars, so far attended by owners and top management personnel of all RCA Whirlpool distributors, set the pattern for the establishment in 1959 of the Dealer Development Dept. which is now conducting profit management training for retailers through seminars, bulletins, and store analyses.

Named to head the new department as distributor development manager is Robert P. Lewis, until recently director of consumer relations.

Westinghouse Names Three to Business Systems Department

PITTSBURGH — Three directors have been appointed to head activities in Westinghouse Electric Corp.'s new business systems department, according to L. R. Hague, director.

Hague, who first began organizing the new department five months ago, said that the three appointments are: Frank J. Carr, who is director of business systems research and development; Frank H. Muns, director of business systems equipment; and Robert C. Cheek, director of business systems application.

Hague said Westinghouse formed the new department "to help the company's divisions improve management effectiveness by providing a single source of analysis, planning, and advice in the growing field of office methods, electronic data processing, etc."

Ideal for all kinds of gas-fired appliances and equipment...

NEW PHELPS DODGE TIN-LINED COPPER TUBE*

Protects Against Corrosion!
Eliminates Maintenance and Replacement!
Easily Installed!

Phelps Dodge has combined the outstanding corrosion resistance of tin with the strength and ductility of copper in a new tube that is immune to troublesome sulphur conditions found in some natural gas and petroleum products. It eliminates maintenance and replacement problems, yet installed costs compare favorably with competitive materials in lines to heaters, ranges, furnaces, air conditioners, LP gas tanks and outdoor gas lamps.

The continuous, inseparably-bonded tin lining positively resists flaking action that can plug lines and orifices. The tube can be bent, flared or soldered, providing "easy-to-use" features that reduce labor costs, speed up installations.

Tin-lined tube can be pulled through old steel or iron pipe without protective wrapping. Available in long continuous lengths and in sizes from ⅛" O. D. to ⅝" O. D. Sample and descriptive data on request.

Phelps Dodge tin-lined copper tube also has advantages for: gas utilities installations; oil lines; laboratory and test equipment; plumbing and water-distilling apparatus; food, beverage and pharmaceutical equipment.

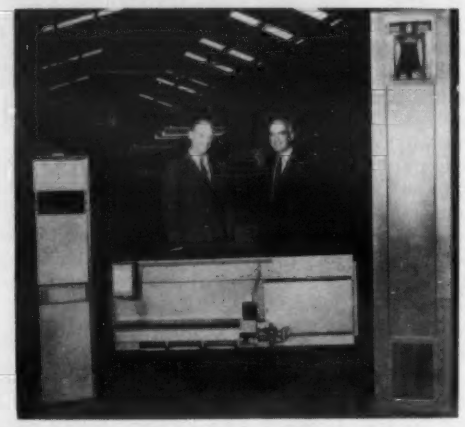
Fusion-bonded tin lining will not crack, peel or flake when bent or flared.

*Patent pending

PHELPS DODGE COPPER PRODUCTS Corporation • 300 Park Avenue, New York 22, N. Y.

FIRST FOR LASTING QUALITY—FROM MINE TO MARKET!

Dearborn Stove Announces Details of Its Entry Into Central Heating Market Through Sequoia Purchase



SEQUOIA PRESIDENT H. R. Kramer and Dearborn President R. H. Norris inspect part of the line of Sequoia-made gas heating equipment. Sequoia was recently purchased by Dearborn and will operate as a wholly-owned subsidiary.

DALLAS — Additional details on entry of Dearborn Stove Co. into the central heating market through purchase of Sequoia Mfg. Co., San Carlos, Calif., have been provided by Dearborn.

As reported earlier in the NEWS, Sequoia will continue operations as a wholly-owned subsidiary of Dearborn, manufacturing gas-fired central heating equipment for residential and commercial installation.

Dearborn, a pioneer in the gas heating industry, will continue manufacture of area heating units, evaporative air coolers, and outdoor cooking equipment in its Dallas plant. In addition, Dearborn offers a complete line of water heaters.

Dearborn President R. H. Norris, in commenting on the recent purchase, emphasized that Sequoia "fits the Dearborn marketing program ideally with a full line of quality central heating products, backed by 16 years of experience.

"This purchase of Sequoia," he stated, "is further evidence of Dearborn's faith in the future of the gas heating and air conditioning industry. It is another step in our program of developing the most complete quality line of heating and cooling equipment possible."

H. Robert Kramer, one of the founders of Sequoia Mfg., will continue as president of the new Dearborn subsidiary. Another founder, Malcolm Stransky, will continue as secretary-treasurer of Sequoia. No personnel changes will result from the merger, it was stated.

Marketing of the new line of central heating and air conditioning equipment will be started by Dearborn in 1960.

Erwin S. Kleinmann, Dearborn vice president in charge of sales, pointed out that "Among Sequoia's full line of central heating equipment we feel two units are particularly well-suited for immediate distribution under the Dearborn name."

One, a gas-fired gravity recessed furnace with a B.t.u. input of 35,000 and 50,000 in its two models, for apartments, small homes, and multiple unit installations of all types, as well as zone heating in larger homes.

The other is a horizontal central heating unit.

"There are four models which Dearborn will make available in '60," Kleinmann continued. "All fit and heat efficiently on an attic platform or in crawl space under the floor. B.t.u. ratings are 80,000, 100,000, 120,000, and 150,000."

The two new Dearborn central heating units will be available through the present Dearborn regional sales offices and warehouses from coast to coast and will be sold by the present Dearborn staff of field representatives.

Kleinmann added that Sequoia will continue its own marketing operations under the Sequoia name.

Dearborn's President Norris said Dearborn engineers "are carefully evaluating other products for later introduction under the Dearborn name. Although we do not plan this for 1960, these central heating units are already designed to accept air conditioning."

Cleaver-Brooks Elects 2 Directors And Vice President

LEBANON, Pa. — Two new directors and a vice president were named by the Cleaver-Brooks Co. at its board of directors meeting at the company's eastern manufacturing boiler center here.

Cleaver-Brooks is a manufacturer of packaged boilers with headquarters and plant in Milwaukee and plants in Waukesha, Wis.; Springfield, Ill.; Stratford, Ont., Can.; and Lebanon.

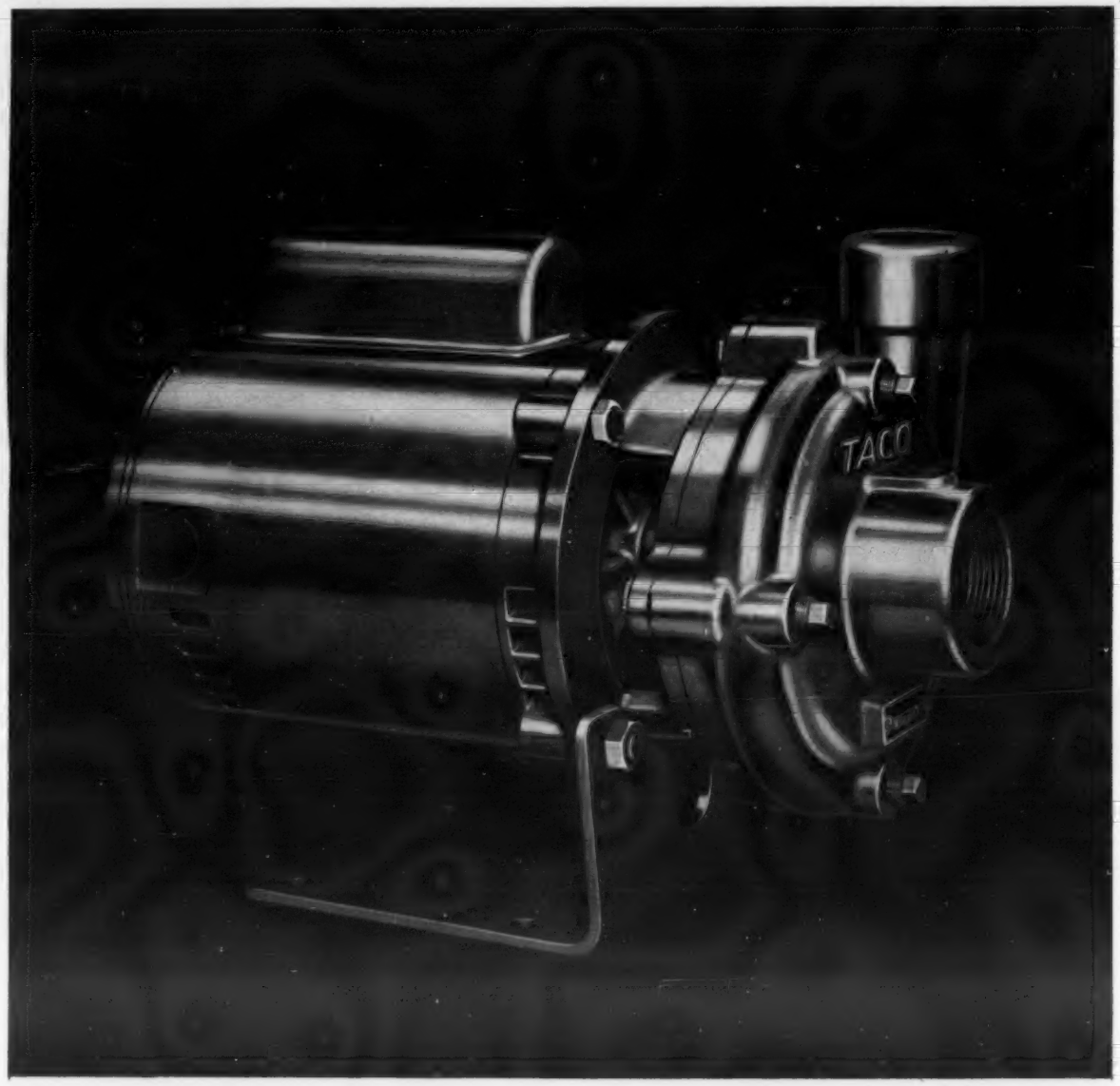
New directors named are James G. Brooks, Cleaver-Brooks vice president in New York, and J. E. Uihlein, Jr., prominent Milwaukee businessman.

H. F. Holtz, Cleaver-Brooks sales manager, was named vice president and general manager of Packaged Boiler Firetube Div.

Home Heating Boiler Shipments Up for Quarter

NEW YORK CITY—Despite a slight lag in housing, shipments of home heating boilers produced by the hydronic industry were up about 10% during the first three months of this year compared to the first quarter of 1959, the national Better Heating-Cooling Council reported recently.

Shipments of all types of residential hydronic boilers—cast iron, steel, and copper tube—were estimated at 60,000 for the quarter.



Lubricate in 1970

That's right. If you put the TACO General Purpose Pump into operation today, you can forget about lubricating it until 1970! Actually the motor is permanently lubricated, but we recommend re-packing the bearings every ten years. No other parts of this rugged pump *require* lubrication! Freedom from lubrication worries is just one of many reasons why the TACO General Purpose Pump is ideal for use in air conditioning systems, commercial installations, laundry equipment, swimming pools, and hundreds of other applications. Design has been so simplified that any servicing necessary can be done in the field, with tools ordinarily carried by all service men. Compact and lightweight, the TACO General Purpose Pump saves installation time too. And its dependable performance saves costly "call backs" In short, it provides a better all around return for your investment. Get complete specifications now. All products in the *complete* TACO Line are "efficiency engineered" to provide maximum performance and economy in all your installations. Write TACO HEATERS, INCORPORATED, 1160 Cranston Street, Cranston 9, Rhode Island.

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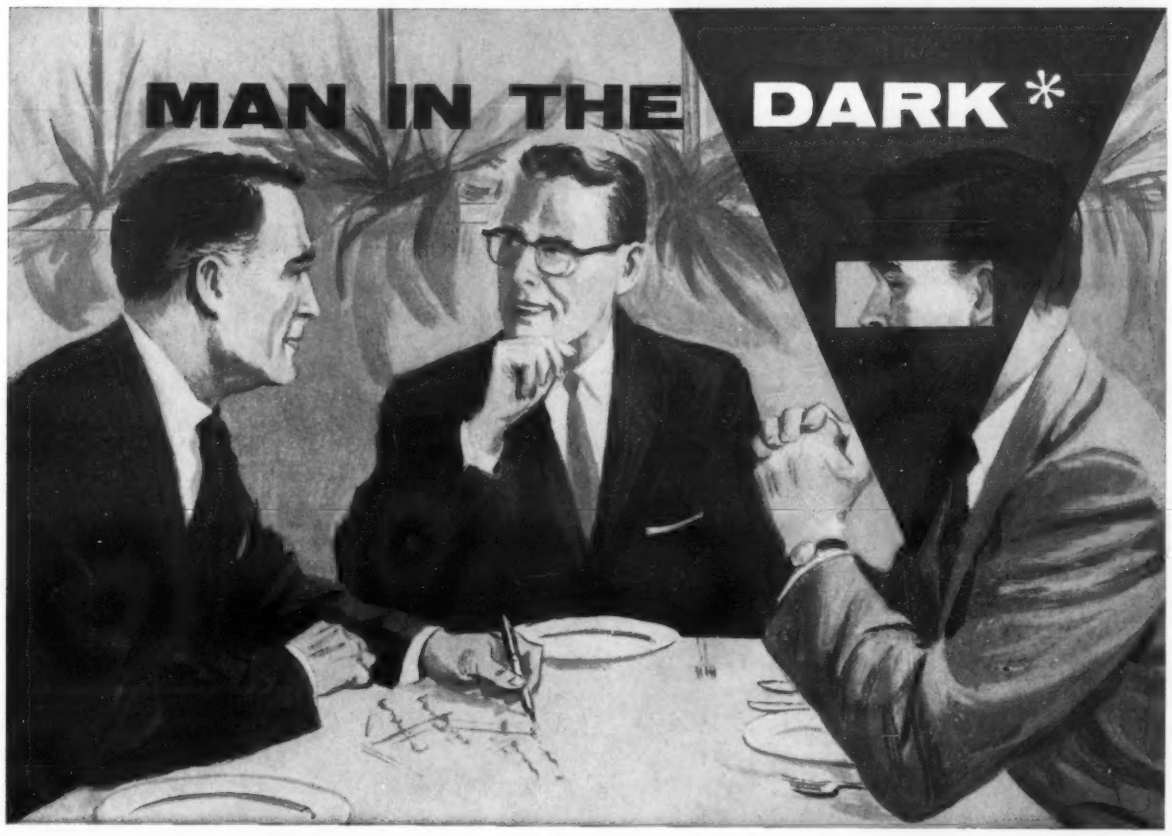

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ANOTHER IN HONEYWELL'S DIAMOND JUBILEE PARADE OF PRODUCTS

The most exciting advance since

HONEYWELL'S

For the first time — you can offer a convenient master control for year-round air conditioning — that your customer can put in any room of his choice, right at his fingertips!

This Diamond Jubilee product was especially designed to help you sell more year-round air conditioning systems. Honeywell's new Weather Station is a complete, precision instrument that's as reliable as it is attractive. It controls indoor comfort and checks outside weather conditions from a single, central location. The convenience of a clock, with its night setback feature, a barometer and humidity indicator also are provided. The panel also includes a warning light for clogged filter and other minor disorders, thus eliminating nuisance service calls.

This amazing new air conditioning control is typical of many benefits you gain by working with Honeywell. When you handle Honeywell products, you have simplified inventories, easier installation and prompt, nationwide service when you need it.

For more information about Honeywell's new Weather Station or Honeywell's complete line of control systems for heating and cooling, phone your nearest Honeywell office, or write:

Minneapolis-Honeywell,
Dept. AA013, Minneapolis 8, Minn.

Sell these Weather Station benefits to your customers!

It eliminates nuisance service calls

He can be his own weather man

No more trips to the basement

Honeywell's new Weather Station is being pre-sold for you to your prime prospects beginning in the April issue of *Better Homes and Gardens* and continuing throughout 1960.

air conditioning itself

NEW WEATHER STATION!

Honeywell

First in Control

SINCE 1885

WHAT HAPPENS WHEN A NATION SPENDS MORE ON GAMBLING THAN IT SPENDS FOR HIGHER EDUCATION?

If you can find any Romans around, ask them. They lived pretty high on the hog in their day. That is, until some serious-minded neighbors from up North moved in. The rest is ancient history.

You'd think their fate would have taught us a lesson.

Yet today we Americans spend twenty billion dollars a year for legalized gambling, while we spend a niggardly four-and-a-half billion for higher education. Think of it! Over four times as much! We also spend six-and-a-half billion dollars a year for tobacco, nine billion dollars for alcoholic beverages, and billions more on other non-essentials.

Can't we read the handwriting on the wall?

Our very survival depends on the ability of our colleges and universities to continue to turn out thinking men and women. Yet today many of these fine institutions are hard put to make ends meet. Faculty salaries, generally, are so low that qualified teachers are leaving the campus in alarming numbers for better-paying jobs elsewhere.

In the face of this frightening trend, experts estimate that by 1970 college applications will have doubled.

If we are to keep our place among the leading nations of the world, we must do something about this grim situation before it is too late. The tuition usually paid by a college student covers less than half the actual cost of his education. The balance must somehow be made up by the institution. To meet this deficit even the most heavily endowed colleges and universities have to depend upon the generosity of alumni and public spirited citizens. In other words, they depend upon *you*.

For the sake of our country and our children, won't you do your part? Support the college of your choice *today*. Help it to prepare to meet the challenge of tomorrow. The rewards will be greater than you think.

It's important for you to know what the impending college crisis means to you. Write for a free booklet to HIGHER EDUCATION, Box 36, Times Square Station, New York 36, New York.

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HIGHER EDUCATION
KEEP IT BRIGHT

Inside Dope

By GEORGE F. TAUBENECK

(Continued from Page 1)

Top This

Four times Ole Case splay-footed out to the mound. Each time Allie Reynolds reassured Stengel he could get through the inning; and each time he did.

Fifth time Casey went out he ordered Reynolds to the showers.

"But I'm not tired," Allie hung on.

"Mabbe you're not; but I am," wheezed the Ole Perfesser.

March 2, 1930, Mel Ott (who by that time had been a Giant star more than four years) humbly, slyly sidled up to mighty manager Jawn McGraw.

"Sir, there was a man in my hotel room this morning."

Quick-to-anger McGraw arose, already neck-reddening.

"That man was I, sir," Ott hastened. "This is my 21st birthday."

The son-of-a-gun had broken into the New York line-up at the age of 16.

Lessons In Semantics

Rocky Bridges, who infielded at one time or another for most of the clubs in both leagues, passed by a schoolhouse—the windows of which had been busted.

"Looks like," he opined, "some kid flunked chemistry."

Roy Campanella left Branch Rickey's office, after some sort of dispute, and was accosted by reporters.

"What did he tell you?" they fired point-blank.

"Couldn't exactly say," Roy bewildered, "but that man sure knows what he's talking about."

Both Feet In the Mouth

Sportscaster Mel Allen and Jim Whatley, baseball coach at the University of Georgia, inhabited the same Alabama U. baseball team in their undergraduate days.

Whatley insists:

"Mel would run in on a short fly ball, shout 'I've got it,' then drop it.

"After he majored in English for a year, he'd run out for a fly ball, call 'I have it,' and drop it."

Ex-manager of the White Sox, Jack Onslow, began his initial radio broadcast:

"Hello, Jack Onslow, this is everybody speaking."

"Al Kaline," announced broadcaster Dizzy Dean, "has hit in nine consecutive games in a row."

"In succession?" innocently interposed his air partner, Bud Blattner.

"Yup. One after another."

Engine of a chartered private plane conked out over a nowhere in Florida. Aboard were the Los Angeles Dodgers, headed for an exhibition game.

Hair-raising, hairbreadth emergency landing was made not far from their destination. Wiseacred pitcher Don Drysdale:

"The delay will be short. All we have to change is one spark plug and 42 underpants and sweatshirts."

Too Close for Comfort

Graceful first baser Gil Hodges of the Dodgers is a devout, albeit unsolemn, Catholic.

On a Friday night the Dodgers were aboard a plane headed for Chicago. Dinner was served—chiefly steak.

Gil didn't touch it, despite the "special dispensation" afforded on such cases.

"At 20,000 feet," he explained, "we're too close to Headquarters."

Shortly after it was announced that a Russian rocket had hit the moon, hurlers Early Wynn (what a marvelous name for a pitcher!) and Billy Pierce warmed up in the bullpen while a night game was in progress.

A full moon had been rising slowly over the right field stands in Comiskey Park.

"How could them Rooskies miss it?" snorted Wynn. "It's a helluva lot bigger than home plate."

Catchers of History

Joe Garagiola, whose name sounds like a combination of a jukebox and a gas station, caught for the Cardinals, Cubs, Pirates, and Giants. Currently he's a sportscaster and highly-paid banquet speaker.

"Each year I don't play," he says, "I get better and better."

"The first year on the banquet trail I was a former ballplayer, the second year I was great, the third year one of baseball's stars, and just last year I was introduced as one of the baseball's immortals.

"The older I get the more I realize that the worst break I ever had was playing."

Catcher Hal Smith writes hillbilly songs as a hobby. Intriguing titles:

"Churnful of Chittlins and a Bellyfull of You."

"Give Me a Home Where the Buffalo Roam, and I'll Show You a Messy House."

Trying to find the right man for a hard-to-fill vacancy—the NEWS' Classified Ads are read by your man.

Place your ad today!

CENTURY MOTORS PULL HEAT OUT OF 42-STORY BUILDING

Forty-two stories above Dallas, on top of the South's tallest building, three Century 50 horsepower motors are driving induced draft fans to keep the Southland Center cool.

Heat absorbed by air conditioning and refrigeration systems must be returned to the atmosphere as efficiently as possible. Increasing industrial, commercial and domestic water consumption makes it necessary to use systems which recirculate and conserve the cooling water. This cooling tower is part of such a system.

Continuous driving of three huge multi-blade fans is necessary to the operation of this three-cell tower. The Century motors are subject to all sorts of weather—heat, moisture, rain, wind, corrosion. But they keep working—continuously. Century application engineers understand such requirements—call your Century District Office or Authorized Distributor.

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They'll Do It Every Time

by

Jimmy Hatlo

REAL ESTATE SALESMAN JACK SELLS A SHACK AND MAKES $50 ON THE DEAL····
$200···YEAH··OKAY··· I CAN USE AN OLD FISHING SHACK!
SOLD!
$50 COMMISH
NO DUMPING
SALESMAN MACK ALSO MAKES A DEAL··A GRAVEL PIT ON WHICH HIS END IS $60····
I DUNNO··· I JUST ALWAYS WANTED TO OWN A GRAVEL PIT!
YOU CAN'T GO WRONG!
FOR SALE
SO THEN JACK AND MACK MEET ON THE STREET··· NOW LISTEN TO A SIDEWALK CONVERSATION···
YAAS···· I JUST SOLD A TRACT OF CHOICE VACATION ACREAGE··· MADE A NICE $2,000 COMMISSION···
GLAD TO HEAR IT, PAL···· I JUST PUT A BIG PARCEL TOGETHER··· BIG INDUSTRIAL SITE··· CHEMICAL INTERESTS··· A $200,000 DEAL·· MADE MYSELF $3,000 !!
6-11
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Customers Demand Redress

ADDRESSING the Society of Automotive Engineers on the subject of foreign competition, White Motor Co.'s executive vice president, J. E. Adams recently told this sad story:

"I just bought my wife a new car, and when I slammed the door, the handle came off in my hand. This calamity was followed in rapid succession by a leaky radiator core, and failure of the power steering unit.

"When I returned home from the last car repair, I discovered that our clothes dryer, for which we had just paid $50 in repair bills, had failed again."

Adams concluded: "I suppose you wonder what all this has to do with foreign competition. The truth of the matter is that it has everything to do with it."

Similar complaints about defective American merchandise are being griped increasingly from various sources. Happily, there is evidence that manufacturers now are devoting more attention to quality control than heretofore.

For example, Whirlpool Corp. late last year launched a stepped-up quality control program which has achieved, according to an official of that firm, the "creation of quality-conscious personnel never before apparent."

Going far beyond in-plant procedures, Whirlpool's new quality group includes five committees which deal with (1) merchandise development; (2) manufacturing and shipping; (3) distributors and dealers; (4) service; and (5) "motivation."

Another example: Efforts of General Electric Co. in several cities to determine *consumer wants relative to service* (and how to satisfy those desires) have had substantial feed-back effect.

Some dealers will tell you, however, that things haven't changed enough for the better. They point out that there's nothing new about the situation: Responsible manufacturers frequently have striven for quality; consumers always have complained; but never do "the twain meet."

Of course, there are several other problems besides "out-of-order" merchandise which disturb a few dealers and many consumers. Complaints in this arena include lackadaisical service, arguable warranties (they didn't read "the fine print"), slow deliveries, questionable pricing and advertising practices.

Everytime something different is added to a product, or an old feature is changed, the chances of trouble are increased.

Moreover, the heated competitive battle for "sales position" has increased the pace of change-making. A General Electric consultant on product service has estimated that "new little problems" involved in Annual Models pushed his company's service load up 70% between 1946 and 1956.

All product innovations aggravate the service problem. It takes time for servicemen to learn how to repair advanced models; larger parts inventories are necessary; labor costs mount.

Designers sometimes add new features and styling without giving any thought, apparently, as to how these innovations will affect servicemen.

Some carpers put the finger on "labor" (both at the factory and service levels) as the major troublespot—claiming that workers no longer take pride in their work—and/or that workers don't have to worry about the quality of their artisanship because strong unions protect them from critical supervision.

Unions reply with such questions as: "Why should we bother about quality when rate of productivity is the only thing management watches?"

Frequently contractors and dealers accuse manufacturers of overselling. They indicate that their woes would be less numerous if national advertising didn't induce consumers "to expect miracles."

A new concept—"systems reliability and reliability control"—is being developed by General Motors. Experience of its space-age supplying divisions—AC and Allison—are being utilized.

Aim here is to determine, at every stage, the mathematical probabilities of durability and function for every component. GM hopes that this IBM stuff will replace faulty decisions based on human judgment.

Adding to the grass-roots hope for "new thinking" in this sector are such other factors as increasing consumer resistance to higher prices, and changing requirements of the mass market.

There are indications that top executives are focussing a spotlight on problems of improving product quality—something that hasn't always been one of their main concerns, some say.

This is good news for everyone, especially consumers, dealers, and servicemen.

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F. M. COCKRELL, *Founder*

'The Conscience of the Industry'

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VOLUME 90, NO. 12, SERIAL NO. 1,634, JULY 18, 1960

From the Files of the News

25 years ago . . .

Field selling organization of York Corp. has been increased by appointment of 15 new distributors, and establishment of special commercial divisions at the York branch sales offices. . . . Complaint of other salesmen led to abolishment of agreements between some local dealers and an agent who advertised that he could sell any make of refrigerator and divide the commission with church of buyer's choosing.

Air conditioning's part in solving two major problems of the lacquer industry—the "blushing" of a lacquer film immediately after its application, and the elimination of dust in lacquer rooms—was reviewed by in a talk before annual meeting of the American Electro-Platers Society. . . . Air conditioning salesmen can materially increase their sales by reminding prospective purchasers that this modernizing equipment may be obtained under provisions of the National Housing Act, states a bulletin for the plumbing, heating, and air conditioning field issued by FHA headquarters.

Too many installations of oil burners have been made without regard to inefficiencies that result in excessive heating costs, weakening the position of oil burning with other methods of heating, declares Prof. D. W. Nelson of the University of Wisconsin. . . . The dust problem in air conditioning, and new investigations in methods of measuring dust and rating of air cleaning devices, were described by F. B. Rowley of the University of Minnesota at an ASHVE meeting. . . . Fundamental considerations and factors involved in the determination of heat loads in commercial refrigerators are given in a manual which McCray Refrigerator Sales Corp. developed for the guidance of its dealers in commercial refrigerators.

10 years ago . . .

The answers to the questions arising from the Korean War crisis "will materials be put under allocation, will consumer durable goods industries be forced to convert to war industry, will spiraling prices bring price controls" are simply "nobody knows." . . . Scott Air Force base has recently placed into operation a refrigerated blood bank which is believed to be the first such storage unit to be activated for exclusive base use at this level.

Mitchell Mfg. Co. is working with distributors of its room air conditioners in an effort to alleviate shortages experienced in some areas and to redistribute inventories at the distributor and dealer level so that by the time the present selling season is over there will be little or no dealer inventories. . . . New Crestwood apartment building to be constructed in Washington, D. C. has plans for a 350-ton chilled water system.

The popular East Longmeadow (Mass.) House specializing in "home-cooked meals with hot rolls and pastry fresh from our ovens" couldn't operate if it didn't have a freezer, says the proprietor. . . . Mechanical refrigeration and humidity control for storage of eggs is being talked up to Nebraska poultrymen as a means of securing more profits from egg production.

A job which has already shown signs of bringing in many new contracts in rapidly-expanding Miami is a "through-the-wall" installation in the new 60-unit Sandpiper Villas apartment development on swanky Venetian causeway, says the Fedders distributor in Miami, who declares that architects and builders have expressed special interest in the installation. . . . Air conditioning installations in office buildings must be "tailored to fit" and operating engineers should be diplomatic, delegates to the annual convention of the National Association of Building Owners and Managers were told. It is possible to provide indoor conditions that will be acceptable to about 95% of the average tenants, but not to 100%, it was pointed out, and to deal with the 5% who are not average, the operating engineer needs some of the qualities possessed by a diplomat.

EVEN LARGE CHAINS CAN PROFIT FROM SERVICES OF COMMERCIAL REFRIGERATION DEALER

Hussmann Refrigerator Co.
St. Louis, Mo.

Editor:

It is a pleasure to write and tell you how much I enjoyed the editorial entitled "Commercial Refrigeration Dealers Have Become Servicing Contractors," which appeared in the June 27, 1960 issue of AIR CONDITIONING, HEATING & REFRIGERATION NEWS.

The ideas which you express are thoroughly sound and are exactly the principles which we have advocated to our own distributors over a period of a number of years.

Many times, the question has been raised as to the opportunities for commercial refrigeration dealers for the future.

Your editorial forcefully brings out the vision of a wonderful future for dealers competently and economically rendering the many services that they can render better than anyone else to food stores.

More and more operators of food stores, regardless of size, are finding through actual experience and actual costs that they can purchase the many needed services at a lower cost than they can furnish them themselves, even if they are a large chain.

Experience shows that this not only accomplishes a better job, but relieves the store owner of the cares and worries of looking after and coordinating an intricate job.

This leaves the owner more time to devote to the operating of his stores and to further improve his knowledge of food retailing.

W. B. MCMILLAN,
Chairman of the Board

'ONE OF FINEST THINGS' FOR GAS COOLING

American Gas Association
New York, N. Y.

Editor:

This is a sort of "Johnny Come Lately" note, but none the less a very sincere one. I have been out of the office attending meetings in the States and Canada ever since your wonderful gas air conditioning issue of May 30 came out.

This is one of the finest things that has happened to the gas air conditioning facet of our business.

Your editorial was a most excellent one and I have had many fine comments about its cogency from among my interested members.

Let us know when we can help, and thanks again.

C. S. STACKPOLE,
Managing Director

'THREE R'S TAUGHT BETTER WITH THREE C'S'

American Gas Association
New York, N. Y.

Editor:

One of the pleasures of my job is that of reviewing the AIR CONDITIONING, HEATING & REFRIGERATION NEWS each week, and you will not be surprised to know that your May 30 issue was particularly pleasant.

I was particularly interested in your articles on the air conditioning of Educational Institutions as a means of getting 12 months usage from these school plants.

We now are preparing a booklet entitled "Gas Goes To School." The "three Rs" are taught better with the "three Cs" — "*C*omplete *C*lassroom *C*omfort."

HAYES S. WALTER, Manager
Commercial Promotion

LIKES TRIMESTER COLLEGE PROPOSAL

431 Steves Ave.
San Antonio, Texas

Editor:

Recently I chanced a glance at a copy of your ACH&RN in a technical library here, and I was impressed by your most apt argument in favor of "The Trimester Three-Year College Program."

The way you put it made such good common sense. I made it a point, therefore, to watch for "Inside Dope" to bring your reader response. It was also thought provoking.

There was too much to copy that was good so I thought I would ask you for a reprint of both editorials.

H. B. BEHRENDT,
Education Specialist
Audio/visual Materials
& Media

MANUFACTURER REQUESTS 500 REPRINTS

WESTERN UNION TELEGRAM
San Antonio, Texas

Editor:

Is it possible to purchase 500 reprints of editorial "Commercial Refrigeration Dealers Have Become Servicing Contractors" in the June 27 issue of AIR CONDITIONING, HEATING & REFRIGERATION NEWS for circulation for our organization only?

ARTHUR KINLEY,
Friedrich Refrigerators, Inc.

WATER COOLER

10 GALLON PRESSURE TYPE

$139.50*

*To DEALERS ONLY

- STURDY • ECONOMICAL
- STAINLESS STEEL DRAIN TOP
- NICKEL FINISHED COPPER COOLING TANK
- ½ H.P. TECUMSEH HERMETIC UNIT
- PRE-COOLER
- 5-YEAR WARRANTY ON REFRIGERATION CYCLE

REMCOR
Model CW-10A

Also 8 gallon Bottle Water Cooler—$89.50

REMCOR PRODUCTS COMPANY
321 EAST GRAND AVENUE,
CHICAGO 11, ILLINOIS
manufacturers of water coolers since 1940

REPRINTS
SELLING FOR PROFIT.

By Frank Klein—Only $1.00 ea. Clip this ad and mail with your name and address to: Air Conditioning, Heating & Refrigeration News, 450 W. Fort St., Detroit 26, Mich.

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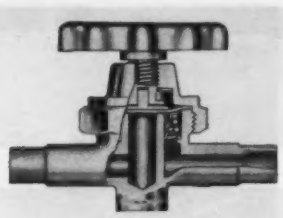
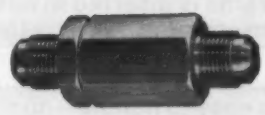
CONTROLLING FLOW
SINCE 1914

Every product bearing the name Henry carries with it complete assurance of on-the-job satisfaction. This quality of performance and the confidence it inspires have made Henry the most accepted line in the industry. For Commercial Refrigeration and Air Conditioning Systems Using Refrigerants 12, 22 and Ammonia.



VALVES—Shut-off
Packless, Packed and Wing Cap Types
Integral and Flanged Connections

VALVES—Pressure Relief
Piston and Diaphragm Types for Atmospheric and Vent Line Applications



VALVES—Flow Check
Spring Loaded and Free Floating Types—also for water and air

FILTER-DRIERS & Driers
DRI-COR Sealed and Cartridge Types with Molded Core and Granular Desiccants

STRAINERS—All Types
Sealed and Cleanable—Applicable for water, oil and air

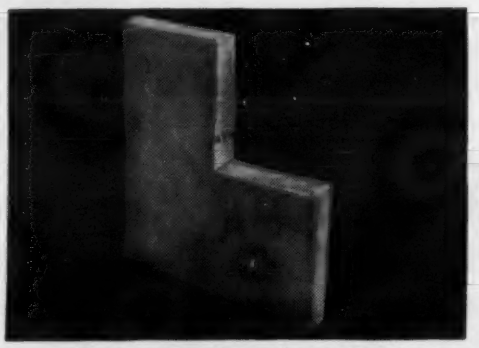
Also: Tube Piercing, Line Tapping, Line Port and Can Tap Valves
Strain-O-Kaps and Terminal Seals for Hermetic Compressors

HENRY VALVE COMPANY
For Refrigeration, Air Conditioning and Industrial Applications
MELROSE PARK, ILLINOIS, U.S.A. CABLE: HEVALCO, MELROSE PARK, ILL.

THE STARTLING FACTS ON THE

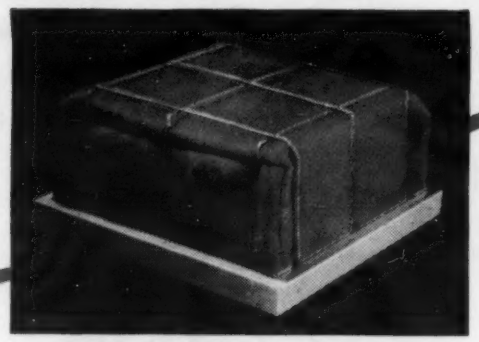
New ULOK Cube

BRAND



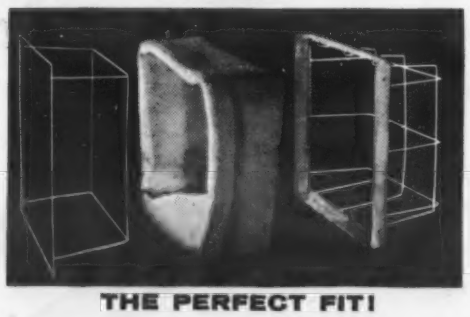
THE PERFECT FIBER!

UNION CARBIDE research has produced the truly ideal filter medium in DYNEL modacrylic fiber—a strong, high capacity fiber with an irregular, highly arresting cross section.



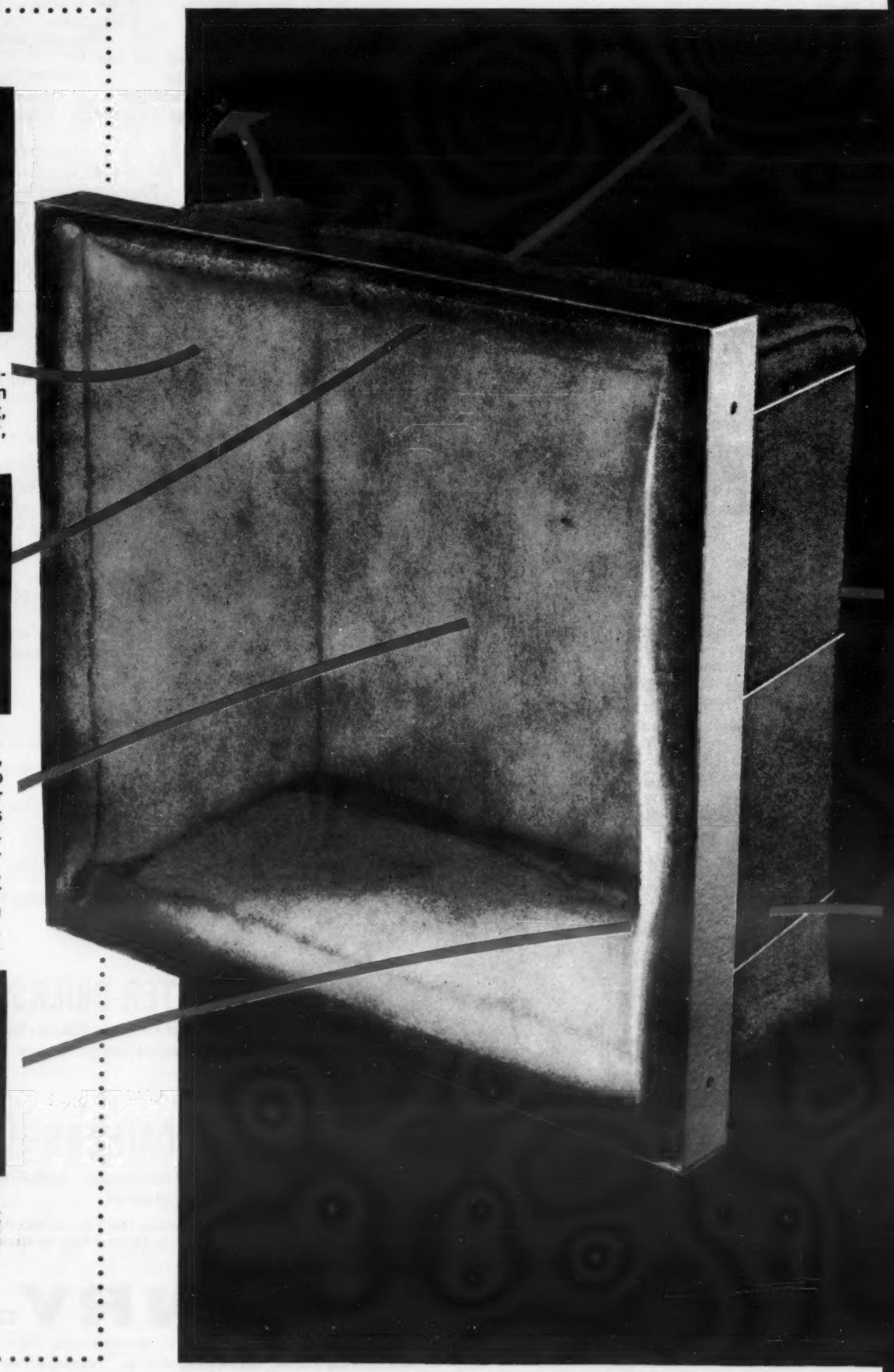
THE PERFECT FORM!

Basic component is a low density, three-dimensional batt, sewed into cube shape. Rust-proof retainer frame is inserted in batt, then batt is inserted in wire retaining basket. Final three-piece assembly is supported by holding frame within unit, is easy to handle—no sharp edges or "splinters". Easy to dispose of when full—simply collapse and discard . . . the dust is in the bag!



THE PERFECT FIT!

Shape of retainer frame inside batt permits filter to seal itself in holding frame. Final filter assembly is a tight, leak-proof, press fit.



e Type Air Filter:

New Filter Medium!

DYNEL filter medium stops and holds unusually large quantities of dirt. Self-sealing, leak-proof assembly completely eliminates problem of filter bypass . . . provides maximum economy at highly acceptable filtration levels.

Saves Change-Over Dollars!

ULOK Cube Filter lasts 6 times longer. Dirt is first trapped on inside face of filter. As dirt builds up, air flow is shunted to large filtering area of four sides. Thus, even after several *pounds* of dirt have been collected, high filtering efficiency and low pressure drop is maintained. This "reverse loading" process increases service life *6 times* over that of conventional filters. Think of the savings in maintenance!

Uses Half The Space!

Medium-size ULOK Cube Filter has a filtering surface of 1040 sq. in.—140 more than a conventional 30″ x 30″ flat filter—yet it presents a frontal area of only 20″ x 20″. Filter bank area can thus be reduced by *half* with medium-depth filter, *even more* with deeper models.

At All Velocities!

ULOK Cube Type Air Filters afford the high filtering efficiency characteristic of low velocity units even in units employing air volumes as high as 1970 cfm!

Proved In Operation!

ULOK Cube Type Air Filters have been soundly proved in numerous installations. Reflecting a complete range of the filtering problems presented under varying operating conditions, these field trials were complemented by extensive and extremely severe laboratory tests.

Ideal for all commercial and industrial air conditioning, heating, and ventilating systems, ULOK Cube Type Air Filters are available in 12 sizes to meet any requirement.

WRITE TODAY FOR FURTHER INFORMATION AND PRICES.

UNION CARBIDE ULOK BRAND

UNION CARBIDE DEVELOPMENT COMPANY

Division of Union Carbide Corporation

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Apartment House Air Conditioning Forum (1)

Consulting Engineer Discusses Through-the-Wall Units, Sees Cooling As Way for New Buildings To Overcome Price Advantages of Older Ones

Factors involved in air conditioning new apartment house buildings include many things in addition to the selection of a specific type of system—the other elements being such things as financing, and "selling" the builder and the architect.

How all of these elements play a role in present-day air conditioning of apartment houses were discussed at one of the "Customers' Forums" arranged by York Div., Borg-Warner Corp. to get some information and first-hand expressions of opinions from those who are major factors in the specifying and purchase of air conditioning.

Principal participants in the apartment house forum were John Pruyn, architect and planning consultant, a former vice president of The Paul Tishman Construction Co. in charge of planning and design, and a man who has specified air conditioning for some major apartment house projects; and George P. Nachman, president, The Spohn Heating & Ventilating Co., Cleveland, veteran mechanical contractor.

Pruyn discusses primarily through-the-wall units in this first instalment, while future instalments will cover Nachman's views on central systems and apartment house air conditioning problems in general. C. J. "Chris" Schurman, sales manager, engineered machinery division of York, served as moderator.

(Schurman Speaking)

We are fortunate in having with us the two men with considerable experience in all phases of apartment house work representing both the consulting engineer viewpoint and the contractor viewpoint. Our first speaker is John Pruyn, the consulting engineer in charge of the Washington Square Village Project in which some 2,500 York room conditioners were installed through the wall.

Pruyn was graduated from Cornell with a degree of Bachelor of Architecture. He spent some time working for a Chicago architectural firm and then spent seven years in Hawaii, principally on military construction, returned to Chicago as a practicing architect. In 1956 he went to New York for the Tishman Co. and was put in charge of urban renewal work. Last December Mr. Pruyn opened his own office in New York as an architect and planning consultant, specializing in high rise-type of apartment construction. He is presently identified with the Gateway Center Apartment Project for Minneapolis, has also been connected with the Washington Square Apartment Project in New York, as I mentioned previously, and is currently working on an 1,100-unit project in St. Louis.

Urban Renewal Offers Great Opportunity

(Pruyn Speaking)

My approach in talking with you is from the standpoint of the sponsor-owner of an apartment project and also from the standpoint of the architect-planner. My work, as pointed out, in the last few years has been almost entirely in the urban renewal field, which is one of the really great opportunities in the next 10 years, as I see it, for apartment house construction.

Practically every city in the United States has a project, at least one project, under way in one stage or another in the urban renewal field. Urban renewal is, of course, vitally needed and about the only means today to develop large scale housing in the so-called middle income bracket.

Through-the-Wall Units Chosen after Long Study

Our 2,000-unit Washington Square Project in New York is one example, conventionally financed. Another, with which I have been identified, is the 1,100-unit Plaza Square Project in St. Louis. In both of these projects we ended up with York air conditioning through-wall units. It was a decision that was made after careful study. We conducted our own laboratory tests.

From the standpoint of a builder's sponsor, I feel that air conditioning is becoming increasingly important. We have an increasingly high cost of building construction and a high cost of mortgage financing, which means that projects built today, duplicating projects built a couple of years ago, are going to be much more expensive with much higher rental ranges and, therefore, in order to compete, we've got to provide facilities and advantages in the newer construction which will enable us to overcome their price disadvantage.

As an example, our St. Louis Plaza project, which was financed two years ago under FHA, was 4¼% mortgage money. We ended up by setting a rental scale of about $135 a month on the one-bedroom apartments and are working on the preliminary analysis of a similar type development in Minneapolis, now, which will use 5¼% money.

The difference of one point of interest is making a difference of $11 per month in the one-bedroom apartment, and when you couple that with the fact that the rental ranges are in the upper limits of feasibility to begin with, you can see that we've got to have some inducement to bring people into these projects.

I personally think that air conditioning is one means of making a project more attractive. In Minneapolis we're working on several other ideas—swimming pools, possibly an ice

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this man works for you....

The more than two hundred Tecumseh authorized wholesalers located in key cities across the country, are in business to serve you. They are, in fact, an extension of our own service department. Each has a well-established business, tailored to give you fast, efficient service. Because of their close association with Tecumseh, these authorized wholesalers have the advantage of being exposed to more diversified compressor applications and, accordingly, their salesmen are more likely to be better experienced in handling your particular problem. Wholesalers stock replacement compressors and parts in adequate volume, based on usage figures in their specific areas. This should normally guarantee you immediate replacement. However, in emergencies, your wholesaler can obtain expedited compressor delivery out of the Tecumseh warehouse at Marion, Ohio. To insure the best and most complete service organization, the Tecumseh Wholesaler Program provides greater incentives to the wholesaler. No wonder this man works for you!

skating rink, underground garage for parking, et cetera. I've been using my time here today, incidentally, to pretty good advantage, in trying to get some ideas for my own work, and one idea we're kicking around on the Minneapolis project is to develop a skating rink in the wintertime with cooling coils in the roof of the garage. We could use the heat from the cooling coils to heat the garage air and in the summer time to use the cooling capacity to cool the corridors of the buildings themselves. I don't know whether this is going to make sense, but it has real possibilities.

We had a real serious public relations problem in Washington Square and I think we learned something from it. Each of the buildings in Washington Square has 650 odd apartments, and we used perhaps 2,500 air conditioning units per building. That means in the two buildings that have been built we have 5,000 air conditioning units.

We opened up the first building and went into the first cooling season without giving the tenants a real background of how to handle this equipment, how to operate it, and what to expect from it. As a result we had a tremendous amount of tenant complaints which we were forced to work out, one way or the other, and you people were most helpful in solving this problem. It was very costly for you and it was costly for us.

Will Educate Tenants In Second Building

I think that on the second building we've learned and that we will see that our tenants have a full prior understanding of the problems of operating their equipment. Once they become suspicious of the equipment, for one reason or another, they tend to invent other objections (such as too noisy, or insufficient capacity, et cetera).

If they could start out with an educated approach, with confidence in the equipment, I think a lot of the problems would never have arisen.

From an engineering and technical standpoint, I am speaking now of the physical unit rather than its B.t.u. capacity or anything like that, we've been working with a 28-in. high window sill dimension, which I think is about as high as we would ever want to do it. We would like, if anything, to reduce the sill height and with this height we are limited to about a 17-in. maximum height on air conditioning unit. Perfectly satisfactory from your standpoint, but it did rule out some of your competitors.

Also, one problem that has been giving us a good deal of concern, with these through-wall units, is the fact that we are building a building that may last for 30 or 40 years, we expect it to, and during that period there will be undoubtedly a complete changeover of air conditioning equipment several times, under normal conditions, so we physically have had to make provisions for one size of opening and we sincerely trust that the trend in air conditioning unit design will be toward smaller dimensions rather than greater, because it would be a very serious problem for us if we were unable, when the time comes to replace the equipment, to put in wider or higher units.

As a part of this we have, therefore, felt it desirable to somehow strive to obtain flexibility in this air conditioning unit installation. In Washington Square and St. Louis we have provided our own exterior wall louver. We arrived at it dimensionally by taking a cross section of the units we were considering and making this a size that would take care of all of them and there is an adapter fitting that is used for whichever unit we finally decided upon.

This has worked out reasonably satisfactorily, except that there is a certain amount of resistance to the passage of air through this special louver, particularly in St. Louis, and it created certain problems. Actually, we explored, in addition to York, several other makes, and all but your unit and one other were forced to withdraw because of the type of fan they used—there was too much resistance from this special louver of ours.

Leasing Agreements Help Solve High Cost

One really basic point, from a standpoint of marketing of this equipment as I see it, is, naturally, the money end of it; the cost of the equipment itself. We find ourselves getting increasingly close to the upper limit of FHA mortgage financing, even without the cost of air conditioning equipment itself. In St. Louis we're actually at that point and we've been forced to work out a leasing agreement of one sort or another.

There's one other aspect of it—we want to provide possibility of air conditioning in every living-dining space and in every bedroom, but in many cases these are all operated on the tenant's meter and the tenant bears the cost of operation, and in many cases we found that the tenants are not using all the units in their apartments.

Our approach in St. Louis is to provide flexibility to permit the tenant to rent the number of units he wishes, in each case for a minimum of a 12-month period. This creates a problem from the standpoint of an air conditioning manufacturer because you never quite know how many units you've sold, but there is an inventory stocking program there.

Interchangeability of Equipment Desirable

Realistically some thought should be given to developing air conditioning equipment interchangeability in order to put it in or take it out at the wish of the tenant. By this means we achieve a lower base rental for the apartment itself and do permit the tenant, if he wants to pay the additional cost (in St. Louis it has worked out about $4 or $5 per month per unit), to put the units in.

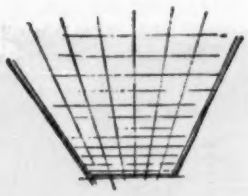
In our own checks on the air conditioning equipment we have installed, we've been very conscious of the noise factor. Actually, on the first Washington Square project there was some criticism of the unit. I think some of this is unjustified, but I understand the new unit going into the second building is going to be definitely improved from this angle.

I personally would like to see combined heating and cooling units developed, if they can, for apartment house construction if they can be done competitively, with through-wall units.

We are, however, thinking of central air conditioning systems for the corridors themselves to eliminate the heat loss through the corridors to the apartments.

(To Be Continued)

each a case history in compressor know-how, service and application



11:30 A.M. Tecumseh wholesaler, John Jones, receives call from serviceman at local supermarket. Needs 1 HP replacement compressor for inoperative case. Also has noticed that small frozen food case is cycling on overload.

11:45 A.M. Proper Tecumseh compressor together with an electrical kit, recommended by Jones for complete electrical component replacement, is sent out to supermarket on wholesaler's truck.

3:30 P.M. Serviceman has installed the replacement compressor . . . the primary reason for his service call . . . along with the new electrical components and a complete check of the smaller case. Both jobs completed in one call, in less time.

The above case history of a typical service problem indicates the quick response you can expect from your Tecumseh authorized wholesaler. It does not presume that your own servicing outlets cannot handle the bulk of service calls themselves. Rather, it means that whatever the request, the Tecumseh wholesaler nearest you stands ready to do his part, knowing that time is of utmost importance. Call on him when you need him. We think you will both appreciate it.

A complete list of authorized Tecumseh wholesalers is available on request.

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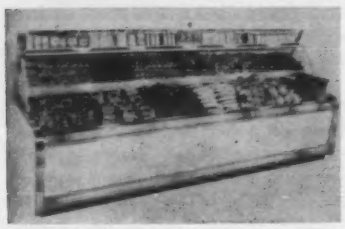
EXPORT DEPT: P. O. Box 2280, 24530 Michigan Ave., W. Dearborn, Michigan

CANADA: Tecumseh Products of Canada Limited, 1667 Dundas St., London, Ontario.

Hill Adds Triple-Deck Produce Stand



● Addition of a triple-deck produce stand to its line for 1960 has been announced by C. V. Hill & Co., Inc., Dept. AH&RN, 360 Pennington Ave., Trenton 1, N. J.

The multi-level refrigerated display affords up to 50% more shelf area than a single deck display without sacrifice of floor area, it was pointed out. With an exterior design and refrigeration system designed especially for produce merchandising, the lower display section can be merchandised with bulk, unwrapped product.

A spray hose is furnished as standard equipment for maintaining "field fresh" appearance of produce in this section. Upper shelves are designed for prepackaged items and seasonal specialties.

Identified as the model 533-T, the new merchandiser is available in 8 and 12-ft. lengths with matching non-refrigerated fixtures.

Offer 'Liquid Burnisher'

● A new electrical contact cleaner and burnisher called "Liquid Burnisher" has been announced by the Tankit Co., Inc., Dept. AH&RN, 560 Belmont Ave., Newark, N. J.

Liquid Burnisher is packaged in an aerosol container and comes equipped with a 5-in. long insulated plastic tube which permits application in difficult areas. This extension tube is easily inserted and removed from the valve opening, it was stated. Liquid Burnisher has application on relays, breakers, solenoids, brushes, switches, controls, prongs, plugs, sockets, thermostats, attenuators, etc.

New Tape Dry Seals Threaded Pipe Joints

● A line of "Teflon" tape for dry sealing all types of threaded pipe joints and threaded cable connectors now is available from Hitemp Wires, Inc., Dept. AH&RN, 1200 Shames Dr., Westbury, N. Y.

The new tape "eliminates the need for conventional pastes and compounds in sealing pipe joints in hydraulic lines, compressed air lines, vacuum lines, steam lines, and corrosive chemical lines," the company claims.

The complete sealing job, according to the manufacturer, is done by wrapping the tape material around the pipe threads. A time-consuming clean-up around the thread is not necessary, it was stated. The material can be used on a wide variety of materials.

Named "Wrap-It," the tape is supplied in ½-in. widths and in ten standard colors. Individually packaged containers are available in 25, 50, and 75-yard sizes.

Mueller Adds Deluxe Winter Air Conditioners

● An improved deluxe line of winter air conditioners has been announced by Mueller Climatrol, Dept. AH&RN, 2005 West Oklahoma Ave., Milwaukee 1.

Featured are large blowers and open-type construction to assure proper air delivery for winter heating and summer cooling, the company said.

Both gas (105-1) and oil (202-1) fired models are available. Models are available in six capacities—individually sized furnaces—from 100,000 to 250,000 B.t.u. input. New optional features include:

Electronic air cleaner—located inside the blower compartment. Clogged filter indicators—when the filters need cleaning or replacing, the homeowner is signaled by a red light mounted right on the thermostat. A "Filter Flag" signal and reset button are also mounted directly on the heating unit.

Summer air conditioning — a "cooling package" consists of a coil cabinet unit mounted on top

of the furnace and a condensing unit placed outdoors. Automatic electric humidifier—new, type 50-800 electric humidifier can be mounted in plenum, supply or return duct. It can add 26 qts. of moisture to the air per day.

Gas-fired models offer additional optional features: "Levelizer (R)" variable input gas valve—"Seasonstat" (R) control outside the house varies input of gas furnace according to temperature changes; variable air flow blower—this blower is used in conjunction with the gas valve—it adjusts the amount of air circulating through the home in accordance with outdoor temperatures.

Disposable Filters Feature Deep Pleats

● Development of new "High Performance" disposable filters, HP-100 and HP-200, featuring deep-pleat design, has been announced by Farr Co., Dept. AHRN, P. O. Box 90187, Airport Station, Los Angeles 45.

The company said this design "provides larger media area in a compact, preformed, folding filter cartridge."

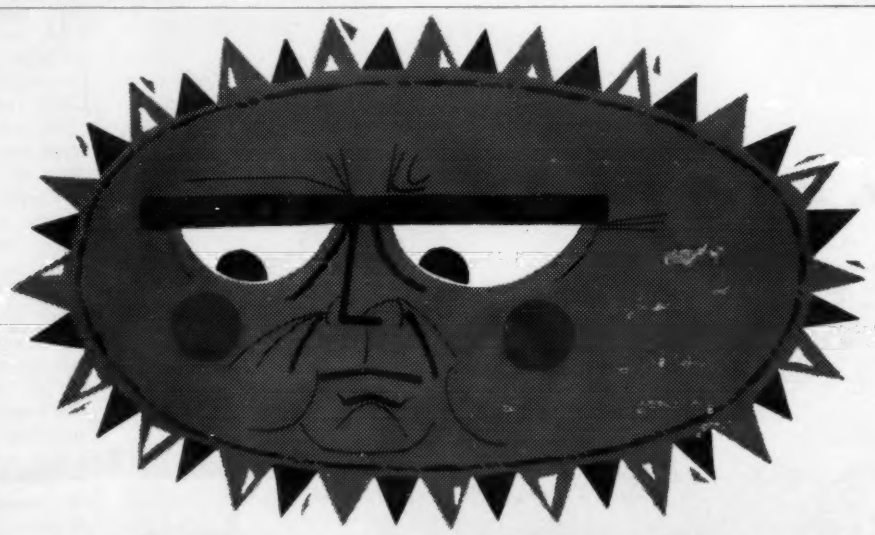
The new HP series is comprised of three interchangeable HP cartridges in three atmospheric efficiency ranges. The HP-100 is in the 85% range; the HP-200 in the 95% range, the company said. The HP-2 cartridge is in the 35% range.

Farr HP filters are designed for any commercial or industrial ventilating or air conditioning system "requiring high efficiency air filtration with low maintenance costs," it was stated.

"The folding media consists of a reinforced material of extremely fine glass fibers in the HP-100 and 200 series. HP-2 media is reinforced, non-woven cotton fabric."

Want More Details?

ADDITIONAL details on products that are described on these pages may be obtained by writing the manufacturer at the address given in each What's New story.



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With a Carrier ice machine, you can make the sales-clinching offer of a sure ice supply, without making "up to" qualifications, or giving "average production" figures. The capacity of each Carrier ice machine is determined according to summer temperatures in your area. The certificate you offer will show the actual amount of ice your customer can expect, an exclusive advantage from Carrier.

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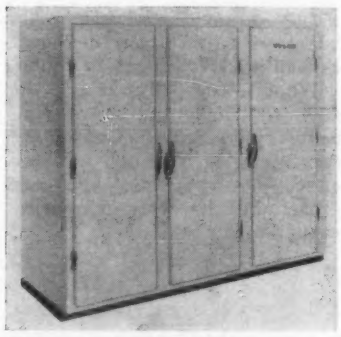
Carrier AIR CONDITIONING · REFRIGERATION



Tyler Announces New Line of Reach-Ins

● Clean "trimline" styling, more net capacity in less floor space, and lower operating and upkeep expenses are said to highlight the all-new "Quality Line" reach-in refrigerators and storage freezers announced by Tyler Refrigeration Corp., Dept. AH&RN, Niles, Mich.

Available in one, two, and three-door models, for self-contained or remote installation, the new Tyler models are offered in a choice of stainless steel or baked-on white enamel exteriors and interiors. Aluminum interiors are also available.

Net capacities of remote installation models are 21.5, 43, and 67.3 cu. ft. Self-contained models: 16.75, 38.2, and 62.5 cu. ft.

Reach-in refrigerator interiors come furnished with four copper nickel, chrome-plated wire shelves per full length cavity and three shelves per three-quarter-length cavity, as standard. At customer's option, chrome-plated pan slides (Tyler Patent No. 2,936,077) to accommodate 18 in. by 26 in. pans may be substituted for wire shelves at no extra charge, it was stated.

Ladder with Wheels Straddles Fixtures

● A new ladder called the "Bally-Hi," for repair and maintenance work, is being manufactured by the Ballymore Co., Dept. AH&RN, West Chester, Pa.

It consists of a 28-ft. two-stage ladder mounted on a sturdy, wheeled frame equipped with collapsible outriggers. Its construction "permits it to straddle seats in auditoriums or theaters, machinery in plants, desks or furniture in offices, fixtures in stores, and to be useful in a wide variety of situations," the company said.

"The aluminum extension ladder consists of two 14-ft. sections. It provides a safe means of working at heights up to approximately 30 ft. above the ground. Guard rails along the entire ladder length and a pulpit-type guard rail at the top enable the user to work confidently at any level without fear of falling.

"The supporting steel frame glides easily from one job to another on 4-in. swivel-type casters. At the ladder end, a locking device of the Ballylock type anchors the frame firmly to the ground when the ladder is stepped on."

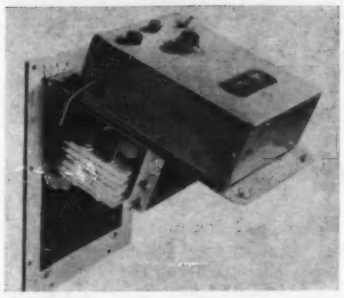
Machine Produces Air-Purifying Negative Ions

● Devices to produce air-purifying negative ions for circulation through hot air and air conditioning ducts to residential, commercial, and industrial spaces are manufactured by Vita-Aire Process Co., Inc., Dept. AH&RN, 1736 North Second St., Milwaukee 12.

"The machine uses ultra-violet rays to produce negatively ionized air which rapidly oxidizes and destroys air impurities such as odors, smoke, mildew, mold, airborne bacteria, and vermin," the company stated.

"The Vita-Aire air purifiers have two exclusive and patented features. The scientifically-designed, non-metallic generator produces ultra-violet rays without hot sparks, direct arc, or heat. The humidity control device dehumidifies air as it passes through the equipment, keeping the generator dry at all times."

Nicolas J. Penning, inventor, has been testing the Vita-Aire



process in various installations for more than two decades, it was pointed out.

"Vita-Aire units are manufactured in a variety of types and sizes to purify air in any size enclosure, from 1,000 to one million cu. ft.," the company said. "Induct units are available to handle air flow from 300 to 3,000 c.f.m. Portable units plug into standard wall outlets and have a self-contained circulator."

Oil Burner Control Offers 'Split-Second Reaction'

● A new burner-mounted primary control for domestic oil burners that is said to feature "split-second reaction" to the oil flame has been announced by White-Rodgers Co., Dept. AH&RN, 1209 Cass Ave., St. Louis 6.

Called the "Kwik-Sensor," the control consists of two parts—a flame detector and a primary unit.

"The flame detector is of entirely new design and reacts only to the radiant rays from the oil flame; not to heat," the company said. "This permits mounting at the blower end of the burner, where it operates in a cool, clean atmosphere unaffected by soot, dirt, or excessive heat.

"No adjustments or relocation of the flame detector are necessary even though the burner may be used in different types of furnaces or boilers having various types of combustion chambers. The primary unit can be mounted anywhere—in or on the burner, in the furnace

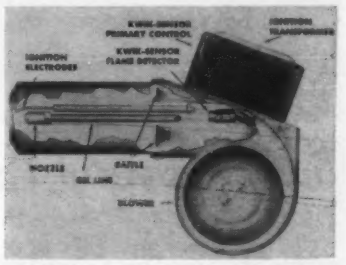


DIAGRAM shows typical application of White-Rodgers new Kwik-Sensor control.

vestibule, or in any other convenient location."

The manufacturer emphasizes that "this is not an electronic device, but rather a control consisting of a new flame detector which operates standard primary control components familiar to any serviceman. The Kwik-Sensor can be installed by the burner manufacturer—using a standard bracket—in a matter of minutes."

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TECH CENTER

by Frank J. Versagi, Technical Editor

Some Practical Pointers on Capacitors

Occasionally, it is necessary on a service call to install a couple of capacitors to get the effect of one which is not in stock or on the service truck. Assuming the capacitors have both the correct and same voltage rating, the capacitance can be varied by connecting them either in series or in parallel.

Unlike resistors in series, capacitors in series do not add capacitance. **Placing two capacitors in series has the effect of creating a thicker dielectric, and the thicker the dielectric the less the capacitance.**

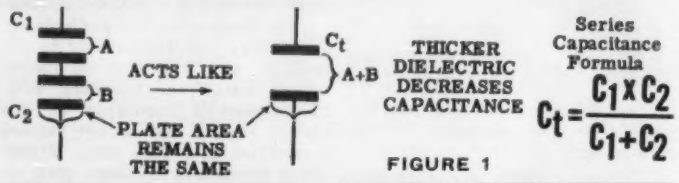


FIGURE 1

The formula for determining capacitance of two capacitors in series is

$$C_T = \frac{C_1 \times C_2}{C_1 + C_2}$$

Suppose it were necessary to replace a 175-mfd capacitor on a ⅓-hp. motor, but only 230-mfd and 400-mfd capacitors were available—for ½ and 1-hp. motors, respectively. If one each of the 230-mfd and the 400-mfd devices were installed in series:

$$\frac{230 \times 400}{230 + 400} = \frac{92{,}000}{630} = 146 \text{ mfd}$$

146 mfd is too low a rating. It may work on some units but it almost assuredly will void UL and utility approval of the equipment's electrical system.

If two 400-mfd capacitors are applied in series:

$$\frac{400 \times 400}{400 + 400} = \frac{160{,}000}{800} = 200 \text{ mfd}$$

200 mfd may be a bit too high, but it is safer until the exact capacitor replacement is found.

What if the 230-mfd and the 400-mfd capacitors were connected in parallel? Connecting capacitors in parallel has the effect of increasing the plate areas and therefore increasing capacitance.

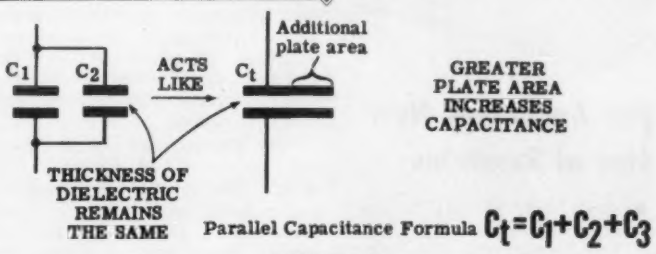


FIGURE 2

LAST WEEK Tech Center discussed capacitors and capacitance in general.

The formula:

$$C_T = C_1 + C_2$$

In our example, then:

$C_T = 230 + 400 = 630$ mfd

We could approach our needed 175-mfd rating for a ⅓-hp. motor by wiring in parallel one capacitor for a ⅛-hp. motor and one for a ⅙-hp. motor—with mfd ratings of 80 and 95, respectively.

* * *

In using capacitors, consider:

An electrolytic capacitor is designed for intermittent duty—rated at 20, 3-second starts per hour at 122° maximum operating temperature. It is designed for 50,000 starts. When it fails, the electrolytic capacitor will **fail open about 85% of the time.** In this instance, the unit will not start.

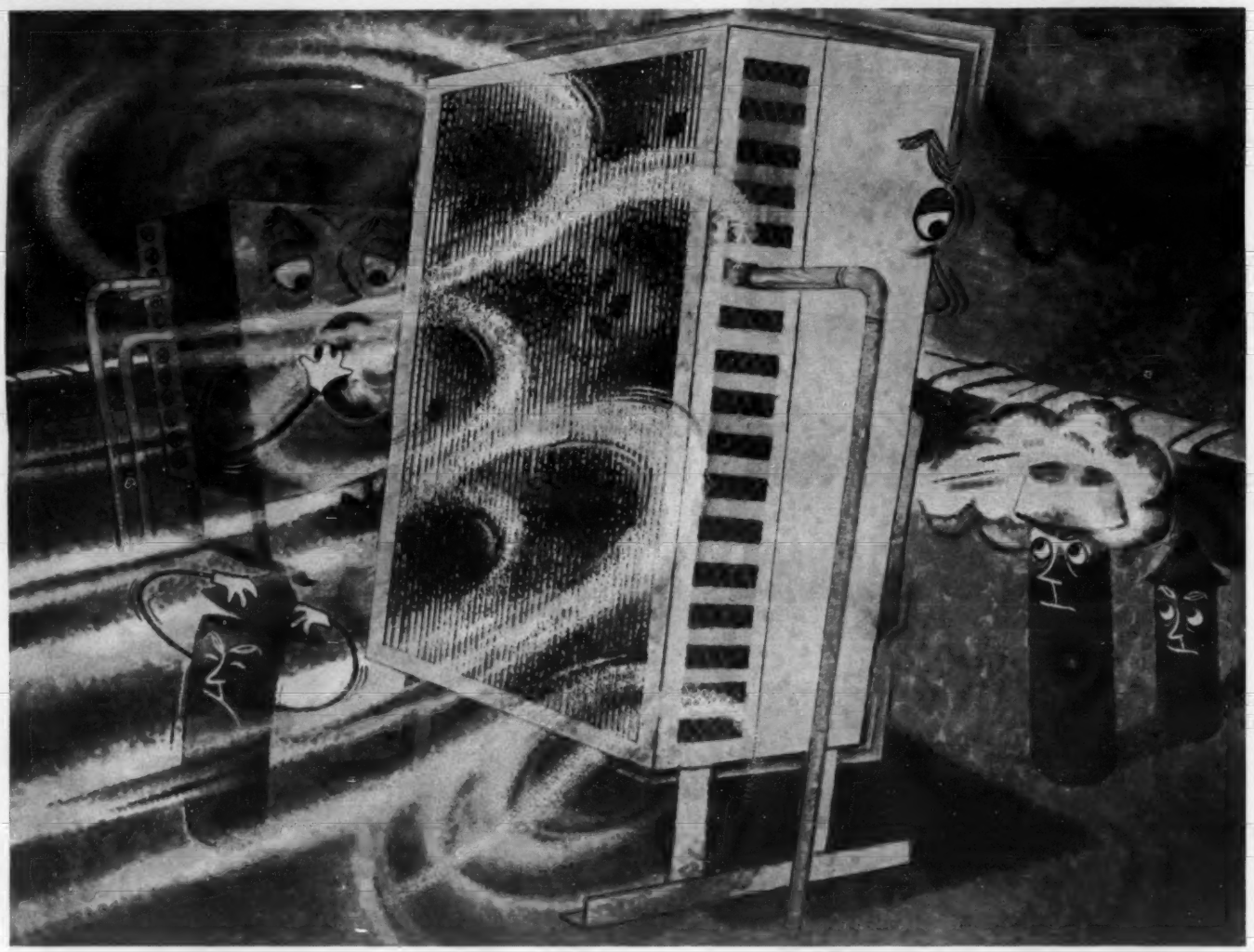
A paper-oil running capacitor is designed to give 12 to 15 years of operation if kept within the operating conditions specified for its application. A 10% increase in continuous supplied voltage or a 10° rise in capacitor case temperature will reduce life about 25%. **Running capacitors will normally fail open.** The unit may continue to run but will draw higher amps. In some cases, the overload protection may trip or the winding may burn out.

An electrolytic capacitor shows no external sign of failure; a paper-oil running capacitor may show a bulge, but not always.

There are those who feel that capacitors can be tested by charging them and seeing if they hold the charge by shorting the terminals with a screw driver. A slightly more scientific method makes use of the relative brightness or dimness of a bulb or series of bulbs on a test circuit.

The weakness in such tests is that they usually show only if the capacitor is totally bad. They do not show if it has deteriorated to a point where it still acts as a capacitor, but not at its rated capacitance. If diagnosis has made the capacitor suspect, only a determination of capacitance can certainly lay the blame, or not, on the capacitor. Other tests are only approaches to this certainty.

Several companies have test cords and setups for quick and accurate testing of capacitors. Some make use of wattmeters and the watt and voltage readings are compared to a microfarad table. A more fundamental setup makes use of a voltmeter and an ammeter as shown in Fig. 3.



BEFORE YOU BUY, THINK:

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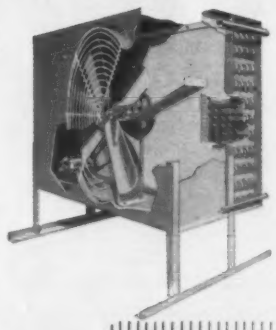
Not if they're H & M condensers with wide fin spacing

All Halstead & Mitchell air-cooled condensers and finned coils come with fins spaced wide to prevent clogging. Their exclusive Turbu-Flo fin design keeps your maintenance costs down, and improves heat transfer up to 15%.

H&M's fins are streamlined, embossed to bring about better air "wash." Since turbulence decreases resistance to heat flow through the air film, heat exchange is greater.

Finned coils come in a wide range of types and sizes: standard and non-freeze steam coils; direct expansion coils with pressure-type distributors; chilled or hot water coils. All Halstead & Mitchell coils are available from 1 to 8 rows deep, with finned heights of 12 to 36 inches, in lengths up to 10 feet.

You can order H&M air-cooled condensers in capacities of 3 to 100 tons. Be sure to specify H&M finned products from your local distributor. Halstead & Mitchell, Bessemer Building, Pittsburgh 22, Pa.



H&M AIR-COOLED CONDENSER WITH WIDE FIN SPACING

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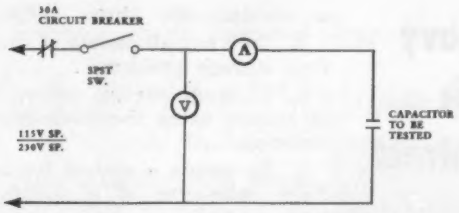

FIGURE 3

The test is based on the fact that at a given voltage and frequency, capacitance is directly proportional to the current drawn by the capacitor when it is placed across the line. In this test, applied voltage must be read accurately, and the formula is:

$$\text{mfd} = \frac{2{,}650 \times \text{amps}}{\text{volts}}$$

If the current is so high it blows the fuse, the capacitor is **shorted.**

If no current flows, the capacitor is **open.**

If current flows, the calculated capacitance should be within plus-or-minus 10% of the rated capacitance. If not, the capacitor is defective.

Some recommend an ohmmeter check as a good on-the-job substitute for the more thorough test above. After the capacitor has been certainly discharged, by shorting the terminals, the resistance of the capacitor is checked at the highest meter range.

If the capacitor is shorted, there will be a low resistance reading.

If the capacitor is open, resistance will read infinity—no needle deflection.

If the capacitor is good (or at least some capacitance) the needle will deflect rapidly as the capacitor charges from the ohmmeter current, and the needle will drift slowly back to infinity as the charge bleeds away.

* * *

Typical effects of capacitors on motors are indicated in the trouble shooting guide for capacitor start-capacitor run motors at the right.

Trouble Shooting Guide

Symptom	Cause
Wattage normal Amperage high Motor runs short while then cuts out on overload.	Open running capacitor or connection to it.
Wattage normal Amperage normal Motor starts with difficulty, runs after starting. (May not start again under load until it cools down, then will start again.	Open starting capacitor or open starting relay.
Motor tries to start but cuts out quickly on overload. (Difficulty not mechanical.)	Shorted capacitor. (Either one.)
Motor just hums—cuts out on overload. (Difficulty not mechanical.)	Open winding, either one. (Short would pass current and overheat immediately; there would be no sustained hum.
Motor blows fuse immediately.	Shorted or grounded winding.

Frick Names Wood Market Planning Mgr.

WAYNESBORO, Pa. — David J. Wood has been appointed manager of market planning of Frick Co., it was announced by Matthew M. Gouger, executive vice president.

D. J. Wood

For the past two years, Wood has been assistant sales manager in charge of distributor sales for the company.

In his new post, Wood will be responsible for product market planning and development; market research and sales analysis; and marketing forecasts, budgets, and quotas. A staff of trained specialists will assist Wood in the program.

Wittek Mfg. Issues 16-Page Clamp Booklet

CHICAGO — A new 16-page clamp booklet has been announced by Wittek Mfg. Co., 4305-43 W. 24th Place, Chicago 23, Ill.

This booklet contains illustrations and condensed information on the firm's "Sure-Tite," "Strap-Tite," "Noc-Out," and other types of standard clamps used in various industries for hose, flexible plastic pipe, and duct connections. A number of custom-made clamps for unusual applications are also described.

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TOP REFRIGERATION PEOPLE DEPEND ON TOP TUBING PEOPLE

GM Steel Tubing specialists are ready to help you solve any steel tubing problem. Their proficiency in forming serpentines is an excellent case in point. Because we have a quantity of multiple benders, we can often adapt one of these instead of starting from scratch. This saves you time and tooling costs. Remember, too, that rotary-straightening of GM Steel Tubing insures flat-as-a pancake serpentines and this speeds up your wire welding for higher production. These characteristics, plus GM Steel Tubing standards for quality, strength, cleanliness and on-time delivery have made it tops with refrigeration people.

Write or wire GM Steel Tubing Sales Manager, *Rochester Products Division of General Motors, Rochester, New York.*

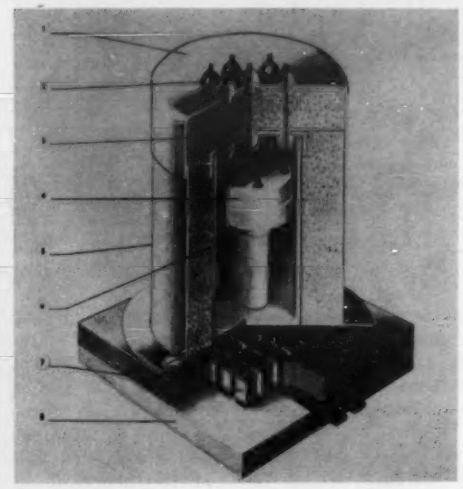
GM Steel Tubing serpentines are "profile" checked for close adherence to your specifications. Dimension, flatness, pressure and cleanliness tests insure the reliability for which GM Steel Tubing is noted.

GM STEEL TUBING
BY ROCHESTER PRODUCTS

AMERICA'S LARGEST MANUFACTURER OF REFRIGERATION TUBING

Known as 'Neelium'

Mass-Produced Semiconductor Alloy Claimed To Have Highest Efficiency



SIMPLIFIED COOLING of electronic devices is one of the principal applications of Neelium, a new thermoelectric material. The constant temperature container, illustrated in the cut-away drawing at left, is capable of maintaining a 40° C. temperature to 0.1° C. accuracy over an ambient range of -50° C. to +70° C. (1) Removable lid, (2) glass-sealed terminals, (3) plastic foam insulation (4) transistorised quartz frequency standard, (5) outer shell, (6) inner shell, (7) resin-sealed thermoelements, (8) aluminum base plate.

PRINCETON, N. J. — Development of a new semiconductor alloy, claimed to have the highest efficiency of any thermoelectric material, and to be the first commercially available in mass production quantities, has been announced by General Thermoelectric Corp., Princeton, N. J. (P.O. Box 253).

Known as "Neelium," the new semiconductor is the "first" quatenary alloy to be marketed for thermoelectric applications, according to GTC. The alloy consists of bismuth, tellurium, selenium, and antimony.

Unusual, too, is the high speed sintering process which "will render for the first time, thermoelectric units at prices which will enable producers of the smaller type refrigerators and cooling units to consider thermoelectric refrigeration.

(Most semiconductor materials are produced by zone melting—a technique which results in very pure, but rather fragile materials.)

According to GTC, a typical Figure of Merit for Neelium is $3\times10^{-3}C^{-1}$, measured with the hot junction at +55° C. Under these conditions, the cold junction temperature is -25° C. Typical values of the three important parameters — thermoelectric power, electric conductivity, and thermal conductivity—are:

thermoelectric power, E, = 184 microvolts per degree,

electrical conductivity, S, = 1,400 ohms^{-1}, cm^{-1},

thermal conductivity, K, = 3.8×10^{-3} per cm second degree.

The company's "Frigistors," thermocouples made with the new material, are already being used in devices which pump heat away from high power transistors, the company stated. General Thermoelectric Corp. also is marketing an experimental kit, especially designed for the study of basic thermoelectric principles. The kits range in price from $330 to $500.

York Gets Navy Thermoelectric Research Contract

YORK, Pa. — York Div. of Borg-Warner Corp. has been awarded a research contract by the Dept. of the Navy, Bureau of Ships, in the field of thermoelectric cooling.

The work will be done largely at the Roy C. Ingersoll Research Center in Des Plaines, Ill., where considerable research work has already been done in thermoelectric heating and cooling, it was stated.

The contract specifically states that York is to assist the Navy in developing food refrigeration systems, using thermoelectric materials, for possible application in future submarines. The research project is divided into three parts:

1. To study all phases of the food storage problem.

2. To study various technics of cooling using thermoelectric materials.

3. To design a system for a Navy submarine of a specific type.

York's manager of marine sales, W. S. Miller, said it is expected that the study will help enable U. S. submarines to carry a wider variety of the kind of food the crews have been accustomed to eating at home and at the same time preserve their full vitamin content by proper storage.

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By Frank Klein—Only $1.00 ea. Clip this ad and mail with your name and address to: Air Conditioning, Heating & Refrigeration News, 450 W. Fort St., Detroit 26, Mich.

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With The Low Silhouette

Efficiency, economy, dependability—those three words most effectively describe the operation of Witt Air Cooled Condensers. Available in a wide range of centrifugal blower and fan type models, for single or multiple compressor installations, for indoor or outdoor applications, you'll find a Witt Air Cooled Condenser to handle any size air conditioning or refrigeration system. Winter control systems available for low temperature areas—multiple circuiting available at no additional charge.

Write For Complete Witt Catalog

A. H. WITT COMPANY, INC.

940 N. Sycamore Ave., Los Angeles 38, Calif.

One in a series of interviews with the men who are "Virginia"

"When removing scale with chemicals it's pretty important to know what type of scale remover to use"

The merits of "Virginia" Solid and Liquid Scale Removers are discussed by Elbert Brower, "Virginia" water treatment specialist.

Elbert Brower, field engineer, Virginia Smelting Company

Q What would you say are the essential differences between "Virginia" Solid and Liquid Scale Removers?

A Any difference in the two types can be expressed in terms of relative safety, speed and cost. Many operators feel that the added cost of the solid product is more than justified because of its safety and ease of handling and because it is less corrosive to certain metallic parts. Other operators like the economy and speedy action of the liquid and are willing to take the necessary precautions in the use and handling of it.

Q Just what is the chemical composition of "Virginia" Solid Remover?

A "Virginia" Solid Remover contains about 96% sulfamic acid. The other ingredients include special inhibitors that have been added to reduce the attack on copper, iron, steel and aluminum. Diluents such as sodium acid sulfate are never used because they have been proved ineffective and may even impair the cleaning efficiency of sulfamic acid.

Q What is the chemical description of "Virginia" Liquid Scale Remover?

A "Virginia" liquid is a blend of hydrochloric acid and metal protecting inhibitors. It is non-fuming. One gallon of it dissolves 3 pounds of scale. Under favorable conditions its attack on metals, even galvanizing, is very slight. I said "Virginia" liquid is non-fuming, and that's an important point. Hydrochloric acid fumes are not only corrosive to metals, but they are a health hazard to persons exposed to them.

Q When should the solid remover be used and when should you use the liquid?

A When protection to equipment is the first consideration, or when descaling must be done indoors, "Virginia" solid should be used; I'd like to emphasize this—if aluminum equipment is involved, always use the solid type. "Virginia" liquid has advantages for removing extra-heavy scale deposits and certain kinds of scale that are resistant to chemical removal.

Q Are some kinds of scale harder to remove than others?

A Yes. I just referred to resistant or so-called problem scales. Carbonate scales, for example, are easily and quickly dissolved. Rust scales, sulfate and silica scales have increasing resistance to chemical removal in the order mentioned. They do, however, respond when the proper pre-treatment is applied. These pre-treatments are covered in detail in our instruction manual, titled "Water Problems and How to Correct Them." A copy will be sent free to anyone who requests it.

Q How can the user tell what kind of scale he has to deal with?

A Well, it's easy to identify carbonate scale. Simply chip off a small piece, drop into a solution of solid or liquid remover. It should give off bubbles of gas rather violently. Sulfate or silica scales will remain virtually inactive—no bubbles. If in doubt, the best thing to do is send a scale sample to our laboratory for analysis. May I add two suggestions here? Never start a descaling job until all dirt and trash are cleaned out of the sump or water tank and never leave an acid cleaning solution in the system longer than 10 hours. Drain out the spent solutions and start again next day with fresh chemicals.

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Continuing Need for Sales Effort In Hydronics And Ways of Getting It Stressed In NAPC Panel

By C. Dale Mericle

CLEVELAND — "It's important today to move our product into the new home because if there are no new home installations, there won't be any modernization sales," declared Franklin Greene, executive director of the national Better Heating-Cooling Council, at the recent 78th annual convention of National Association of Plumbing Contractors here.

Greene was one of six speakers at a panel discussion on "New Profit Opportunities in Hydronics" which also featured three contractors and two representatives of the Institute of Boiler & Radiator Manufacturers. Moderator was R. S. Doherty, president of BHC and vice president of A. W. Cash Valve Mfg. Corp.

PANELISTS who discussed profit opportunities in hydronics at the recent 78th annual convention of National Association of Plumbing Contractors included (l. to r.): Leonard Kiley, Kenneth Leitgabel, Roy Gustafson (speaking), R. S. Doherty (moderator), Prof. Warren Harris, Robert Ferry, and Franklin Greene.

'Adequate Sales Effort' Has Been Lacking

Pointing out that the hydronics industry has "the best product of its kind" and adequate technical information about it, Greene emphasized that "the major failure of the industry" has been lack of an "adequate sales effort."

Speaking of "breaking through with the hydronics story to builders," Greene asserted that builders would be interested in providing anything that his customers want, anything, that is, that will help sell houses. Dealers should get the wholesaler's salesmen and the manufacturers' representatives to help in selling the builder, Greene also suggested.

Builders will accept hydronic systems for medium-price tract housing if it is offered as "good heating at a reasonable price," according to panelist Kenneth Leitgabel, a Milwaukee contractor.

"We started in heavily in residential again about three years ago," he recalled. "We tried to sell a basically sound job at a reasonable cost but not the lowest cost, and we bought in large quantities to get the lowest prices.

"The formation of the Wisconsin Better Heating-Cooling Council about the same time helped us and other contractors," Leitgabel also pointed out.

Contractor Actively Assisted Builder by Aiding at Model Homes

Active help for the builder in selling homes equipped with hydronic systems has been provided by Leitgabel through having representatives at model homes on weekends, and he has been aided in this by wholesalers and manufacturers, he pointed out.

Contractor Roy Gustafson of Minneapolis urged the group to consider two sales slogans his firm has used with some success:

"Ask them to buy" and "give them a choice."

Too many contractors never tell their acquaintances what business they're in, Gustafson declared, "and even most representatives of manufacturers and wholesalers don't try to sell us. They're just order-takers. We should talk plumbing and heating among our civic groups."

It's important also, Gustafson said, to offer prospects a choice between a good system and a better system. Many people have very definite "pride of ownership" and will want to buy the best, he said. Also involved is the point of sales psychology in offering a choice between something or something as opposed to a choice between something or nothing, he implied.

In his heating activities Gustafson has aimed at the custom builder producing homes in the $75,000 to $500,000 bracket. That this approach has had some success was indicated by his statement that "we were invited to provide the plumbing and heating for the new home of Minneapolis' leading architect without plans or price being mentioned."

Entire Generation In Minneapolis Doesn't Know about Hydronics

Noting that "Minneapolis was once a wet heat town but now we have an entire generation that doesn't know what hydronics is," Gustafson called attention to the possibility that "newlyweds who live in a good hydronically heated apartment could be sold on a hydronic system for their home."

Devoting most of his time to discussing differences between remodeling and new house work, Leonard F. Kiley, a contractor in Salem, Mass., also commented that "I've never seen a plumbing contractor who couldn't sell, but many of them don't want to, and when they're busy they say they don't have time to sell."

New Techniques Can Be Adapted to Remodeling

While solutions to heating problems vary, Kiley said, new techniques can be adapted to remodeling work to save the consumer money and still provide the best heating. He cited the use of ⅜-in. copper tubing in first-floor heating remodeling as one cost-reducing method.

Use of 180° F. water in remodeling is also favored by Kiley, but he recognized the need for higher temperature water in tract housing where pricing is more competitive.

Stressing the need for contractors to keep abreast of latest methods, Kiley referred to a recent case in which contractors' bids ranged from $645 to $1,450 for the same job. The lowest bid, Kiley declared, was actually a sound one based on careful calculations, and it left ample room for profit.

Use of correct methods of load calculation was likewise urged by Robert E. Ferry, general manager, Institute of Boiler Radiator Manufacturers.

"This usually cuts sharply the size and cost of equipment as compared with guesswork or short-cut methods of load calculating," Ferry asserted.

Cites Recent Gains In Hydronics

Outlining the activities and history of I-B-R, Ferry also called attention to recent gains in hydronics. First-quarter shipments of boilers this year were up 15% over 1959 and 30% over 1958, according to Ferry, who also commented that first-quarter shipments of warm air furnaces this year were down 11% from 1959 although up slightly from the 1958 first quarter.

Details of I-B-R research were outlined by Prof. Warren Harris of the University of Illinois, who directs these activities for the institute.

Citing several advances in hydronics achieved through research, including baseboard radiation, Prof. Harris called special attention to successful use of 215° F. water instead of 180° for hydronics systems.

"This reduces radiation required by 40% with obvious savings," he said. "We have used it for 15 years without trouble," he continued. "It has not increased operating costs more than 3% to 5%; there has been no increase in service calls, and no decrease in comfort."

While research can develop "evidence," Prof. Harris reminded contractors emphatically that "you must tell people about it."

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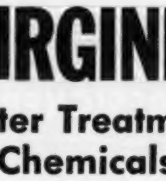

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Described by Mechanical Engineer

Techniques, Instruments for Balancing High, Low Velocity Air Distribution In Big Buildings

DETROIT — Techniques and instruments for balancing both high and low velocity air distribution in large building air conditioning systems were described recently by Sidney A. Littmann, chief mechanical engineer for Giffels & Rossetti, architect and engineer.

Littmann pointed out that there is no single omission in the design or installation of air conditioning systems, which has a more insidious effect upon the satisfactory performance of the system than the omission of balancing.

If the system is not balanced, it won't produce desired results, he emphasized.

"Primarily, proper air flows are necessary to the maintenance of desired space temperatures," he said. "In some instances space humidity control is likewise dependent upon proper air quantities. Rates of flow to individual spaces must be maintained to avoid drafts.

"Excess of exhaust over supply is required in some areas, such as kitchens and laboratories in order to control migration of odors.

"Buildings are frequently maintained at a slight pressure above atmospheric in order to prevent cold drafts when outside doors are opened and to minimize infiltration.

"No one of these ends can be accomplished without reasonable balance of the air handling system."

Means Provided For Balancing System

Littmann noted that provision is made in the design of the system for balancing by inclusion of some or all of the following:

1. Balancing dampers.
2. Adjustable splitters.
3. Registers, grilles, and diffusers having built-in volume control devices, either manual or automatic.
4. Reserve capacity in air handling equipment.
5. Special constant volume fittings.
6. Pressure control of dual duct systems.

High Velocity System

In the case of high velocity systems, where noise created in the ducts is attenuated in an acoustic chamber near the outlet, need for balancing is usually met by incorporating into the attenuation chamber some sort of automatic volume control based upon the static pressure existing in the chamber and necessary for overcoming the resistance downstream.

Balancing of high velocity systems requires no particular sequence of adjustment, provided only that the proper mixing boxes have been installed so that capacity range of the unit includes required delivery and that field adjustment is built into the mixing box controls.

In such cases, only tools required are a screwdriver or special wrench to suit the control device furnished.

With automatic controls at the mixing boxes, which will, when once set, maintain constant delivery to the connected outlets, it is only necessary to set these controls to produce the required air delivery, Littmann explained.

Changes made at other mixing boxes will not affect delivery at the mixing boxes which have already been set.

It is desirable when setting the control device, to measure air flow at the outlets to verify calibration of controls.

Mixing boxes may be adjusted in any sequence as convenient.

Conventional Pressures

For systems operating at conventional pressures, it becomes necessary to measure air flow at each outlet and to adjust the flow to each so that its delivery is in the proper proportion to the total flow of the system.

Final capacity adjustment is then made for the system as a whole by adjusting the fan speed as required.

In order to proportion the flows, a particular sequence of adjustment will result in the most efficient procedure.

Table 1

Outlet	Initial Measured Delivery	Percent of Design
A	120	60
B	90	90
C	120	120
D	140	140
E	160	160
F	150	75
G	75	75
H	80	80
I	85	85
J	100	100
K	175	88
L	80	80
M	90	90
N	120	120
O	90	90
P	220	110
Q	160	80
R	100	100
S	110	110
T	130	130
U	170	85
V	110	110
W	120	120
X	150	150
Y	110	110

As one outlet delivery is changed, volume and pressure changes which result will be reflected throughout the system.

The sequence recommended is one which will result in the minimum necessity for resetting or remeasuring those outlet deliveries which have already been adjusted.

The theoretical principle underlying the recommended balancing procedure is that flow to all outlets downstream of a given point will vary by the same percentage when the pressure at that point is varied.

Balancing Procedure For Simple System

Fig. 1 shows a relatively simple system having three branch mains. Flows shown are design deliveries.

If the pressure at point 1 is doubled, deliveries at outlets A through E will be increased by approximately 40%.

Table 1 indicates air deliveries which might exist in the fan system shown in Fig. 1 with all dampers open and all adjustable splitters in their neutral positions.

Dampers are assumed at each of the individual outlets and splitters at each split of the main (upstream of points 1 and 2 and points 3 and 4).

Ordinarily, the lowest ratio of actual to designed delivery will exist in the most remote branch, and this is the condition shown in the table, at outlet A.

To bring this system into balance, it is necessary to successively reduce the flow to outlets B, C, D, and E, until their flows are in the same ratio to design as outlet A.

At first glance, it does not seem to make sense to reduce the delivery of branch B, which is already below design, but this is the only way in which the pressure drops throughout the system can be made equal.

As the flow to branch B is reduced, less total air will flow through the fan and through the branch main beyond point 1.

There will thus be less resistance in the ductwork leading to branch A, and a greater pressure at the fan, both of which result in greater pressure and consequently more flow at outlet A.

This might result in a delivery of 125 c.f.m. at outlet A, so the delivery at outlet B should be adjusted to 62.5 c.f.m.

If these two outlets now have the same ratio of actual to design delivery, they will remain in balance between themselves, regardless of what is done with the rest of the system.

The next step is to reduce delivery at outlet C until it is in proportion to branches A and B. Again, as C is reduced, A and B deliveries will be increased.

There will, however, be a net reduction in total air flow to this portion of the system, as its over-all resistance is increased.

To check that the outlet being adjusted is in balance with those already balanced, it is necessary to check only one of the previously adjusted branches, not all of them.

The procedure as outlined above should now be repeated or continued for outlets D and E. Original delivery of this por-

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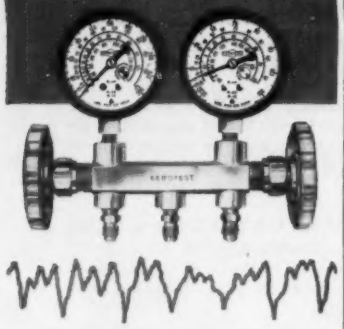

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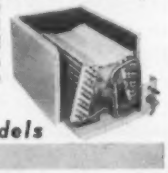

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tion of the system, with all dampers wide open, was 88% of design. Final delivery, as balanced, will fall somewhat below this figure, but higher than 60%, which was the minimum value for any of the outlets.

Having balanced branch main 1, the operation must be repeated for branch mains 2 and 4. Branch main 1 should be completely ignored while balancing branch main 2. Branch mains 1 and 2 should be likewise completely ignored while balancing branch main 4. Whatever is done to outlets F through O will have no effect on the balance between outlets A through E, although total delivery through outlets A through E may increase somewhat during the process.

Branch main 4 may give some trouble, because the outlet having the lowest initial percentage of designed delivery is not the last outlet on the branch main.

Here it is necessary to adjust the last outlets P and U to the same percentage of designed delivery as exists at the outlet having the least ratio of actual to design delivery. Then proceed as for branch main 1.

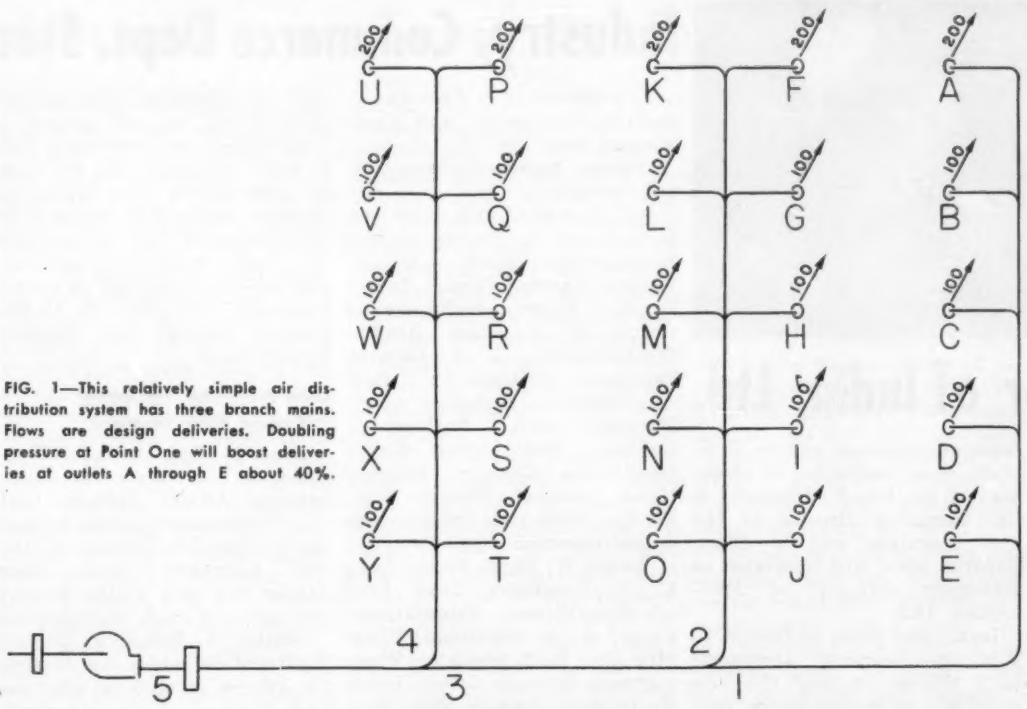

FIG. 1—This relatively simple air distribution system has three branch mains. Flows are design deliveries. Doubling pressure at Point One will boost deliveries at outlets A through E about 40%.

As the artificial increase in resistance of the system should be kept as small as possible, it may be desirable to return to outlets P and U. Readjust their deliveries upward if, at the time P, U, and V have been adjusted, they are found to have lower ratios of actual to designed delivery than exist at point Q.

Having attained balance of these four outlets, procedure as outlined for outlets A through E can be followed for the remainder of branch main 4.

With the outlets on each branch main in balance, the procedure is next extended to put the several branch mains into balance.

This is done by adjustment of the splitter dampers at the junction of these branch mains with the main duct.

Again, since balance between various outlets on the branch main will not be upset by changes in pressure at start of the branch main, it is only necessary to balance outlets J and E, for example, by adjustment of the splitter damper at 1-2.

Branch mains 1 and 2 will then be in balance.

Once 1 and 2 are in balance, they can be balanced with branch main 4 by the splitter damper at 3-4, by comparing only two outlets, one on branch main 4, and any other one.

Having all outlets in balance does not yet conclude the balancing procedure. It is only necessary that the ratio of actual to designed delivery, which has been accepted and made the same for all the outlets, now be made to equal 100%.

(To Be Continued)

Underground Stream To Supply Condenser

NEW YORK CITY—Condenser water for air conditioning a new motel to be erected here will come from an underground stream discovered during the construction of the West Side Airlines terminal, according to builder Irving Maidman.

The five-story motel, to be located on Tenth Ave. between 40th and 41st Sts., will have 130 rooms, restaurant, cocktail lounge, and a two-level garage.

Entire roof will be devoted to recreational facilities with sundecks, tennis and badminton courts. This arrangement will be made possible because water from the underground stream avoids the necessity of a cooling tower on the roof.

General contractor is Joseph P. Blitz, Inc. Architects are Wechsler and Schimenti.

$65,000,000 New York Amusement Center Being Air Conditioned by Airtemp

DAYTON — Airtemp Div. of Chrysler Corp. has been selected as the exclusive air conditioning supplier for "Freedomland, U. S. A.," New York City's $65,000,000 amusement center, it was announced by Airtemp President Paul M. Augenstein.

The new center was opened to the public June 19.

All exhibits, restaurants, and accommodations in the 205-acre park will be air conditioned by Chrysler equipment, the announcement said. According to its owners, it will be the world's largest entertainment center.

Chrysler Airtemp will also maintain an exhibit at Freedomland. Its theme involves man's past, current, and possible future methods of heating and cooling his domicile. This exhibit will occupy a building in Satellite City, the only area in Freedomland which points towards the future.

The remainder of the amusement center is constructed in the miniature shape of the United States. Except for Satellite City, it will recall and depict the history of the U. S. A.

Chrysler has already installed air conditioning equipment in exhibits by Continental Casualty, Eastman Kodak, Schaefer Beer, Scripto, and Schering Drug.

Installations now in progress or committeed are for the American Express Co., American Oil, 18 Brass Rail Restaurants, Borden's, Benjamin Moore Paints, Braniff Airline, Continental Coffee, Chun King, Coca-Cola, Welch's Grape Juice, and Yale & Towne.

Augenstein said he expects additional exhibitors to install air conditioning equipment this summer and next year, when many other manufacturers plan on opening exhibits.

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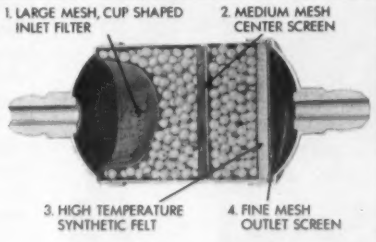
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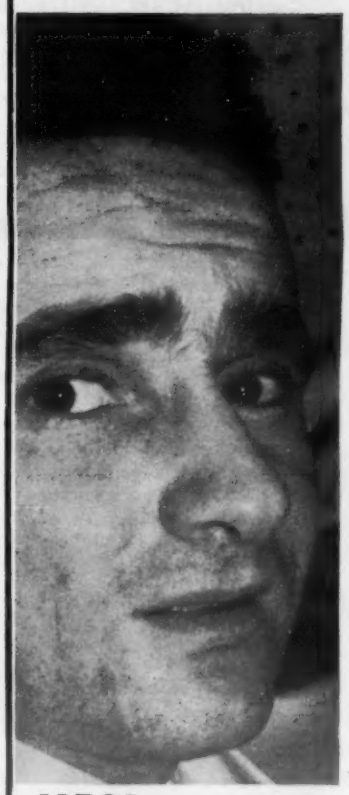

YES!

SOLVEX MAINTENANCE FORMULA protects against rust, scale and corrosion. For recirculating water systems using all types of cooling towers as well as for closed recirculating systems. No need to carry two or more chemicals in stock when one will do the job.

SOLVEX SPECIAL ALGAE CONTROL also reduces stocking and usage worries. Proven over the years . . . no rotation of chemicals required for positive control of algae and odors. No chlorine to attack redwood fill . . . no copper sulphate to destroy galvanizing.

Both of these Quality SOLVEX products are available in handy tablet form or in economical granular form. Safe . . . effective . . . compatible.

CHEMICAL SOLVENT CO.
BIRMINGHAM, ALABAMA

ASK YOUR WHOLESALER

LARGEST PRODUCER OF REFRIGERATORS IN INDIA—That's what Z. R. Irani (right), board chairman of the newly-formed Kelvinator of India Ltd. exclaimed to (left) B. A. Chapman, executive vice president and general manager of Kelvinator, and E. H. Wilcox, vice president of Kelvinator International. The occasion was on Irani's visit to Detroit to finalize formation of the new firm to produce Kelvinator refrigerators in India.

Form Kelvinator of India, Ltd.

DETROIT — Formation of a new manufacturing licensee to build Kelvinator and Leonard household refrigerators in India was announced by E. H. Wilcox, vice president of Kelvinator International, a subsidiary of the appliance division of American Motors Corp.

The new firm, to be known as, Kelvinator of India, Ltd., was formed jointly by Kelvinator International, Electronics, Ltd. of New Delhi, currently manufacturing Kelvinator and Leonard room air conditioners, and Spencer & Co. of Madras, distributor of Kelvinator and Leonard products in India since 1946.

Construction of an initial 75,000-sq. ft. manufacturing building by the new company will begin this fall on a five-acre site in Faridabad, an industrial suburb of Delhi.

The plant is expected to be in operation by 1961, with an initial production goal of 10,000 refrigerators annually. Plans call for combining assembly work with importation of certain components the first year, increasing local manufacture the second year to about 60% of the total product, and 100% local manufacture the third year.

While Kelvinator International has a minority investment in the new company, Wilcox said, it is predominantly Indian-owned. Chairman of the board of the Kelvinator of India organization will be Z. R. Irani, who continues as chairman of the board of Spencer & Co. Managing director of the new operation will be Sham Sundra, who will continue as managing director of Electronics, Ltd.

Irani, who came to Detroit to sign the licensing agreement with Wilcox, claimed the new plant will be India's largest producer of refrigerators when completed.

At present, total Indian production is about 2,000 units a year, it was pointed out. Quantity imports are presently banned by the Indian government to conserve foreign exchange, he said.

In spite of India's population of some 400,000,000, Irani said, there are only about 100,000 electric household refrigerators currently in use. The total market could probably absorb 40,000 annually, under present conditions, he said.

"In spite of the fact that some 250,000,000 of India's people now live in poverty in mud huts, there are still some 10,000,000 who can afford a refrigerator. But only a small fraction of those who can afford one have any conception of what it might be to own one.

"Times are changing, however," Irani said, "and with the increasing tempo of economic development the potential over a period of years is enormous."

NOW!
A low-cost, lightweight "Freon" leak detector!

Pocket-sized Halide Leak Detector is the *smallest, easiest-to-use* tool available today to detect hard to find "Freon" refrigerant leaks. Just light the Halide torch and place hose at point of suspected "Freon" leakage. Even traces of "Freon" turn the light blue flame a vivid green. Each butane charger lasts 30 minutes. "OFF-ON" control. Also can be used as a blow torch, soldering tool.

Height: 6½"
Weight: 5 oz.
Chargers: 49¢ per box of 2
Price: $8.95

KIDDE MANUFACTURING CO., INC., 795 Farrand St., Bloomfield, N. J.

Industry, Commerce Dept. Study Exports--

(Continued from Page 1)

dustrial Equipment and Components Div.

Industry representatives present included:

Ad Auriema, Ad Auriema, Inc.; Henry L. Panzer, Sillcox Refrigeration Corp.; C. M. Stuart, Carrier Corp.; Robert Tyler, Tyler Refrigeration Corp.; F. A. Haag, Bendix-Westinghouse; J. A. Galazzi, Tecumseh Products Co.; Paul Augenstein, Airtemp Div., Chrysler Corp.; Nathan A. Gardner, Worthington Corp.; Hawthorne Deming, International General Electric Co.; George Jones, Air-Conditioning & Refrigeration Institute.

Walter W. Birge, Ranco, Inc.; C. E. Renninger, York Div., of Borg-Warner International Corp.; A. A. Silverman, Vilter Mfg. Co.; M. S. Strickler, Westinghouse Electric Corp.; James R. Tranter, Tranter Mfg., Inc.; Harlan Grosshans, Fedders Corp.; S. S. London, Thermo King Corp.; Joaquin Alvarez, Frick Co.; Bruce Edwards, C. V. Hill Co.; C. M. Cordley, Cordley & Hayes; William R. Moll, National Electrical Mfrs. Assn.

This conclave was the 19th of a weekly series the Commerce Department is staging to obtain opinions of important industrialists so as to make effective the export trade expansion program which our government is planning.

Confabs Will Aid In Tariff Negotiations

Such organized confabs will be particularly helpful to U. S. negotiators when mutual tariff concessions are discussed with other governments at the forthcoming international sessions devoted to revisions of the General Agreement on Tariffs and Trade (GATT).

Distillation of these discussions will be used also in trade negotiations outside the GATT framework.

Industry spokesmen at this particular meeting agreed that a combination of difficult import licensing requirements, and prohibitive duties, are excluding or restricting their trade opportunities in a few markets.

Tariffs and monetary exchange problems, for example, were cited as handicaps in several Latin American countries.

Long-term credits demanded by certain importers must be granted to meet European competition on this score. American manufacturers aren't accustomed to "credit competition" of this sort.

Other gripes aired:

The amount of "paperwork" sometimes required of importers; "pirating" of U. S. designs by foreign competitors; sudden changes in import regulations, and restrictive "rigged" specifications.

European Standards Used Even on U. S. Projects

Specifications often are written around European standards even for projects sponsored and paid for by U. S. Government agencies, it was alleged. American firms which are requested to bid on these projects consequently have difficulty in adapting their equipment to the "rigged" project.

In calling for assistance (or, at least, coaching) for the task of surmounting such obstacles, industry spokesmen urged that the Commerce Dept. strengthen its trade promotion services, and broaden coverage of credit insurance now available to exporters through the Export-Import Bank.

Gov't Hopes To Ease Trade Bloc Impact

Bradley Fisk, Assistant Secretary of Commerce for International Affairs, revealed that "the Government" hopes to ease the competitive impact of the two European trade blocs (Inner Six and Outer Seven) through new trade negotiations.

Walter A. Edwards, Deputy Assistant Secretary for Domestic Affairs, pointed out that export business of the air conditioning and refrigeration industry amounts to approximately 7.5% of total production.

That percentage can be improved, he asserted.

"Tell us what action the Federal Government can take to expand your sales, and we will do our best to help," he promised.

William A. White, Administrator of Business and Defense Services, Dept. of Commerce, reported:

"I have checked back a few years on the volume of the world movement of goods. In 1956, for example, this figure was $92.4 billion. In 1957 it was $99.6; in 1958 it was $94.5; and in 1959 it was $102.0.

"Well informed people tell me that within the next 10 years this figure is expected to grow to a range of $140-$150 billion a year."

Here is what the U. S. share of this world market has been in recent years:

In 1956 it was about $17 billion or about 19%.

In 1957 it was about $19 billion or about 19%.

In 1958 it was about $16 billion or about 17%.

In 1959 it was about $16 billion or about 15%.

On the basis of figures cited earlier, plus expectancies predicted for the next 10 years, obviously substantial increase in world-wide movement of goods is indicated.

U. S. Industry Must Work For Bigger Share

"What the U. S. share will be will depend on what U. S. industry—such as yours—does," continued White.

"We must take positive measures to obtain for U. S. products a bigger share of this bigger market. We certainly cannot permit our position to deteriorate or go by default.

"We have seen develop in the past few years a serious unfavorable U. S. balance of payments—a deficit of more than 3 billion dollars last year. This condition must not continue.

"It must be corrected. The strain on our gold position cannot be permitted to go on like this, lest we forfeit what's left in Fort Knox."

There are about 300,000 manufacturer establishments in the U. S.—only 12,000 of which are actively engaged in the direct export of their products.

When someone mentions diversification, first thought that comes to mind is diversification of products. Perhaps *diversification* of markets—on a world-wide basis—might be simpler and more surely profitable.

Milton R. Frank, Chief of the General Service Equipment Branch pleased the informal gathering (which followed the formal sessions) by revealing that self-contained air conditioning machinery, refrigerators, and refrigerator parts, have been put in the No. 2 list for tariff concessions from the European Economic Community ("Common Market," or "Inner Six").

Nathaniel Knowles, Deputy Director of the Bureau of Foreign Commerce, briefed the group about trade promotion plans to popularize U. S. goods overseas.

R. Henry Rowntree, Chief of the Economics Div. of the Export-Import Bank, explained his new credit insurance program for exporters.

Discriminatory Ocean Freight Rates Scored

Industry representatives "raised hell" about discriminatory ocean freight rates to which U. S. shippers are subjected. They were told that relief should be sought from "conferences" which set the rates.

Ernst A. Van Es, Director of the Transportation and Utilities Staff, Office of Economic Affairs, (BFC), confided that this unfavorable rate structure is caused by greater labor costs at American ports.

Thomas E. Drumm, Jr., Assistant BDSA Administrator, presided ably at this meeting, which was arranged by BDSA's General Industrial Equipment and Components Div. of which Charles F. Hughitt is Director.

A more detailed report of these sessions will be published in the Aug. 1 "World Trade Issue" of the NEWS.

Frick Names Kofod Southeast Asia Regional Manager

WAYNESBORO, Pa. — Appointment of Ernst K. Kofod as Southeast Asia regional manager for Frick Co. has been announced by Joaquin Alvarez, sales manager of the International Div.

E. K. Kofod

Kofod, who has been with Frick since 1951, formerly was assistant chief estimator in the company's Refrigeration & Air Conditioning Div.

With regional headquarters located at 25 Saiboo St., Singapore, the Frick territory encompasses Malaya, Indonesia, Cambodia, Laos, South Vietnam, the Philippine Islands, British Borneo, Thailand, and Hong Kong.

'Nature and Extent of Warranty'--

(Continued from Page 1, Col. 5)

Sales Corp. which in turn sells the products to distributor-purchasers, it is stated. Text of the stipulation continues:

"Before the refrigerators and freezers leave the factory Borg-Warner Corp. has placed therein a warranty certificate furnished by Norge Sales Corp. Advertising and promotional material, including specification sheets, are prepared and disseminated by Norge Sales Corp. . . .

"Among the statements, claims and representations appearing in the aforesaid warranty, specification sheets and other advertising and promotional material were the following:

" 'FIVE YEAR PROTECTION PLAN—WE WARRANT to the original purchaser the Sealed-In Mechanism of this Norge Household Refrigerator to be at the time of sale free from defects in material and workmanship under normal use and service, and we will, within five years from date of delivery to the original purchaser repair or replace without any cost to the customer any Sealed-In Mechanism which our examination shall disclose to our satisfaction to be thus defective. The foregoing applies only to the Sealed-In Mechanism under conditions specified herein, and does not apply to any other part of the Norge equipment.

" 'After one year from date of delivery to the original purchaser, a charge may be made for service calls and adjustments (other than the repair or replacement of the Sealed-In Mechanism as stated in the Five-Year Protection Plan above), and for any repairs to the cabinet, its finish, the Norge Motor controls and starting equipment.

" ' . . . GUARANTEED BY YOUR QUALITY NORGE DEALER.

" ' . . . additional 4-year warranty on sealed-in system.'

"Through use of the foregoing statements, claims, and representations, the said corporations have directly or impliedly represented that defective sealed-in mechanisms in refrigerators and freezers will be replaced without cost to purchasers within five years of delivery, when in fact parts only are furnished and some purchasers have been required to pay labor charges in connection with the installation of such parts. The said corporations also represented that their products were guaranteed without disclosing the terms and conditions thereof.

"It is hereby agreed by Borg-Warner Corp. and Norge Sales Corp. that in connection with the offering for sale, sale and distribution of refrigerators, freezers, or other products in commerce, as defined by the said Act, they, and each of them, will forthwith cease and desist from representing, directly or by implication, that under the Five Year Protection Plan Warranty, or any other warranty, repairs or replacement of parts will be made without cost to the purchaser when such is not the fact, or otherwise representing that a product is warranted unless the nature and extent of the warranty and the manner in which the warrantor will perform thereunder are clearly and conspicuously disclosed in close conjunction therewith.

"This stipulation is entered into pursuant and subject to Sections 1.54 and 1.55 of the Rules of Practice of the Federal Trade Commission. It does not constitute an admission by Borg-Warner Corp. and Norge Sales Corp. that they have engaged in any method, act, or practice violative of law."

Midas Muffler Muffled On Guarantee Claims

WASHINGTON, D. C.—Consent orders forbidding Midas, Inc. and International Parts Corp., Chicago, to misrepresent the guarantee on their auto mufflers and other products were issued recently by the Federal Trade Commission.

In February, the companies were charged with falsely advertising that their mufflers were guaranteed unconditionally for the life of the car on which they are installed.

According to the commission, the guarantee is not unconditional and has unrevealed limitations. The orders, to which the companies agreed, specify that the nature and extent of the guarantee must be clearly disclosed.

The agreements are for settlement purposes and do not represent admissions by the companies that they violated the law, the FTC pointed out.

Engineers, Inc. Opens Washington, D. C. Branch

NEWARK, N. J.—Joseph A. Rosenthal, president of Engineers, Inc., here, announced the opening of a Washington, D. C. branch with Rear Admiral P. H. FitzGerald USN(Ret.), as general manager.

Engineers, Inc. is an engineering and designing firm specializing in building design and construction management.

Spence . . . . RSES . . . . Jansen

(Continued from Page 1, Col. 2)

gineers Society, to the recent announcement that the Air-Conditioning & Refrigeration Institute is working with the United States Office of Education to establish adult training classes in refrigeration and air conditioning subjects in local and state schools. The program is intended to help alleviate what many consider a critically growing shortage of trained service and installation personnel in the industry.

"To me," Spence told the NEWS, "the ARI program will result in increasing the chances of getting people to make the first contact with the pertinent subjects, much as they would make at already established trade schools. Once exposed, these people are naturals for membership in RSES where they can continue studying."

Spence recalled that ARI has been "fully cooperative in many ways with RSES." He stated that the institute had conducted a three-year committee study of the educational needs of the industry and that the committee's recommendations had "so closely paralleled the activities of RSES that it would have been redundant to set up a second such program."

The International Cooperation Administration (working with foreign governments under the well-known Point Four Plan) is publicizing RSES in 62 countries, said Spence; as a result of a meeting with Air Force personnel last year, five AF Bases have formed RSES chapters and all are operating or setting up a study course. "These are but two further examples of the role that RSES plays in establishing and maintaining a growing core of qualified service engineers."

(Continued from Page 1, Col. 1)

12,000. Enrollment in the study course has continued such that this year's Term 1 activity is higher than last year. This, of course, would indicate that Terms 2 and 3 will also be heavily attended in the next couple of years."

Jansen reviewed the development of the Study Course for the NEWS: The original Term 1, devoted to fundamentals of refrigeration, began in 1956; Term 2, concerned with commercial refrigeration and system components, began in '57; Term 3, on air conditioning installations and applications, came into being in 1958.

"Based on reaction to the courses, and on suggestions we have had from students and instructors," Jansen said, "we are beginning a revision of the several terms to make them more significant and balanced."

(RSES lessons are based on reference material contained in the society's Service Application Manual, SAM, formerly called the All Makes Service Manual. Designed for some 100 chapters, SAM already contains some 60 sections; the discussions are written by industry authorities and, in many cases, supplied by manufacturers.)

"Presently, our revision activities are being concentrated on the Instructor's Guides which accompany the lesson material," according to the assistant educational director. "The guides are being made to include new material added to SAM."

Enrollment in the Study Course is available only to RSES members, stated Jansen, a fact to which he attributes a major part in the increasing membership of the society. The International Society charges no fee; members who are missing pertinent sections of SAM must purchase them from the International, but otherwise the courses are handled autonomously by the local chapter.

Some have found it necessary to pay rental fees for meeting halls and to pay instructors, and each chapter determines for itself the best way to handle these costs. "While most of our instructors are probably representatives or employes of the industry's manufacturers, we have some professional instructors, and one or two city officials (inspectors) teaching," Jansen said.

Through 1959, exactly 2,182 members had taken part in RSES study courses; 1,262 in Term 1, 1,640 in Term 2, and 280 in Term 3. While the final figures are not in for 1960, there are 25 chapters conducting first year courses, 15 conducting Term 2, and 25 holding the final year's training. "As of May, 1959, Certificates of Proficiency (for completion of all three terms) were awarded to 162 members," Jansen concluded.

Command-Aire Names Eugene G. Dickens

DALLAS — Eugene G. Dickens of Dallas has been appointed sales manager of Command-Aire division of Texas Products Mfg. Co., it was announced.

Based in Waco, Texas Products manufacturers the Command-Aire line of residential and commercial central air conditioning equipment. Prior to joining Texas Products, Dickens was associated with Minneapolis-Honeywell Regulator Co. in Dallas.

Airtherm Names Ben McDougall

ST. LOUIS — Ben M. McDougall has been named sales manager of the Heating & Air Conditioning Div. of Airtherm Mfg. Co. here, the firm announced.

McDougall

McDougall formerly was field sales manager for Baltimore Aircoil Co., and prior to that was sales manager for Kennard Corp.

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MANUFACTURER'S REPRESENTATIVE
by
FOUR DIFFERENT MANUFACTURERS
of

Air Conditioning and Refrigeration
Components and accessories
Sell to OEM and Wholesalers

Territory—Indiana, Illinois, Wisconsin and some adjacent area. Here is a rare opportunity for one or two men to establish a permanent and profitable business.

All replies confidential

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FREE PARKING AND FAST COUNTER SERVICE AT THESE 4 BIG WAREHOUSES

PATENTS

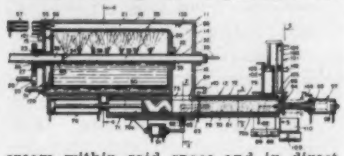
Week of March 8

2,927,369. METHOD OF MAKING MULTIPLE PASSAGE HEAT EXCHANGER. William H. Coblentz and Donald W. Scott, Dayton, Ohio, assignors to General Motors Corp., Detroit.

The method of forming multiple passage heat exchange units having serpentine passages formed between two continuous strips of metal which comprises forming upwardly and longitudinally extending corrugations in the mid portion of a first metal strip, forming complementary downwardly and longitudinally extending corrugations in the mid portion of a second metal strip. . . .

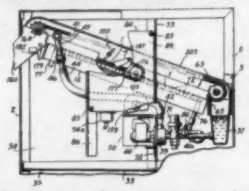
2,927,439. METHOD AND APPARATUS FOR FREEZING UNPACKAGED PRODUCTS. Isaac H. Polk, San Jose, Calif., assignor of twenty-five percent to William R. Graham, and twenty-five percent to Collins Mason, both of Los Angeles, Calif.

7. In a method of hardening ice cream to a hard, frozen, rigid state, the steps of introducing unpackaged ice cream in a non-rigid state into a space defined by refrigerated wall means, freezing the unpackaged ice



cream within said space and in direct contact with said wall means to a hard, rigid body, moving said wall means relative to said rigid body of ice cream in a manner and direction such as to shear the rigid body of ice cream free of said wall means, and expelling the sheared rigid body of ice cream from the wall means. . . .

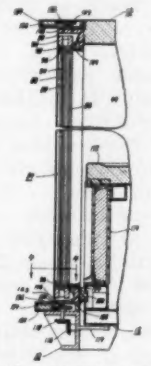
2,927,440. APPARATUS FOR MAKING ICE AND TO IMPROVED CONTROL MEANS THEREFOR. Everard F. Kohl, Lakewood, Ohio.



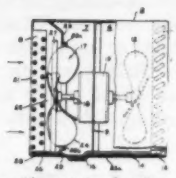
1. Apparatus for preparing ice in the form of fragments including a thermally conductive plate, means for supporting said plate in an inclined position, means for simultaneously passing water downwardly over said plate and cold vapors in heat exchange relation therewith to freeze water passed downwardly thereon into a layer of ice, means for then heating the plate to a sufficient extent to release the layer of ice from the plate....

2,927,441. REFRIGERATING APPARATUS WITH MEANS PREVENTING CONDENSATE ON TRANSPARENT PANELS. Verlos G. Sharpe, Dayton, Ohio, and Donald J. Schwarz, Oak Park, Mich., assignors to General Motors Corp., Detroit, Mich., a corporation of Delaware.

1. In a refrigerator, the combination, a cabinet having an insulated food storage compartment therein, an evaporator for cooling said compartment, means supplying liquid refrigerant to said evaporator, said cabinet including an inner liner and an outer shell spaced from said inner liner, a breaker strip connecting said inner liner to said outer shell, said breaker strip comprising a molded plastic member formed of electrical insulation material, a layer of an electrical conducting material sprayed onto said member. . . .



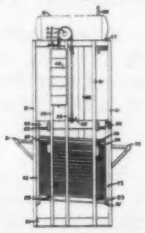
2,927,442. ROOM AIR CONDITIONER CONDENSATE DISPOSAL. Paul I. Kooiker, Lyndon, Ky., assignor to General Electric Co., a corporation of New York.



1. A self-contained air conditioner for conditioning the air within an enclosure comprising a casing adapted to be mounted in an aperture in an outer wall of said enclosure, a barrier in said casing dividing said casing into an inner compartment having a side exposed to the enclosure and an outer compartment having a side exposed to the outdoors. . . .

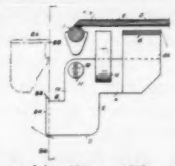
2,927,443. PLATE FREEZER FOR PACKAGED FOODS. Frank W. Knowles, King County, Wash., assignor to Belt-Ice Corp., Seattle, Wash., a corporation of Washington.

10. In a plate freezer, two superimposed refrigeratable plates, means supporting said plates for approach movement, a strip adjacent to corresponding edges of said plates, means supporting said strip from one of said



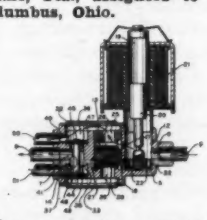
plates for movement toward and away from such edges of said plates, and means carried by the other of said plates and operable by approach movement of said plates to effect movement of said strip away from the adjacent edges of said plates.

2,927,546. REFRIGERATOR DOOR CLOSURE PREVENTIVE MEANS. William G. Eoff, Portland, Ore.



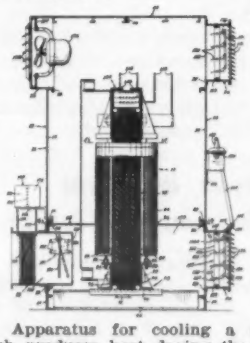
1. The combination with a refrigerator having a door, door jambs, side walls, and a plurality of shelves having front and rear supporting bars positioned within said refrigerator and extending between the side walls thereof, of a door closure preventive means also positioned within the refrigerator comprising a substantially Z-shape blocking-arm adjacent and parallel to each refrigerator side wall each blocking-arm having a body portion and an upper bar extending from said body portion toward the rear of the refrigerator and a lower bar of greater width than thickness extending from said body portion toward the front of the refrigerator. . . .

2,927,606. VALVE MECHANISM. Samuel J. Matchett, Jr., Columbus, Ohio, and Estel C. Raney, Fort Lauderdale, Fla., assignors to Ranco, Inc., Columbus, Ohio.



2. Valve mechanism comprising, a body having a cylindrical chamber, said chamber having a coaxial outlet port at each end thereof, a piston reciprocable in said chamber, two valve members carried on opposite ends of said piston and operative to alternately open and close said outlet ports when said piston moves from one end of said chamber to the other. . . .

2,927,736. APPARATUS FOR COOLING A DEVICE WHICH PRODUCES HEAT DURING THE OPERATION THEREOF. Frederick S. Rohatyn, New York, N. Y.



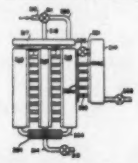
1. Apparatus for cooling a device which produces heat during the operation thereof comprising, a housing enclosure for said device, said enclosure having motorized exhaust means, air inlet filter means cooperating therewith to provide a forced draft of filtered air therethrough and damper means to provide a natural draft therethrough; control means for operating said damper means to open and close the latter. . . .

2,927,780. COMBINATION HEATING AND COOLING UNIT. Lauren E. Seeley, Durham, N. H., assignor to The H. B. Smith Co., Inc., Westfield, Mass., a corporation of Massachusetts.

In combination with a heat exchanger of the type disposed along the baseboard of a room, parallel to and spaced from the floor, a hollow elongate sheet metal housing fastened to the baseboard so as to enclose the entire length of the heat exchanger, said housing having a rear wall rising from the floor behind the exchanger, a top wall extending forwardly over the top of the exchanger, a front wall descending from the top wall parallel to the rear wall and close to the front of the exchanger. . . .

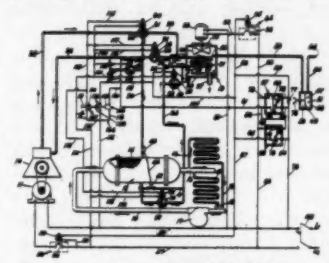
Week of March 15

2,928,253. THERMOELECTRIC APPARATUS FOR COOLING AND HEATING LIQUIDS. Charles R. Lopp and Warren R. Danielson, Benton Harbor, Mich., assignors to Whirlpool Corp., a Delaware corporation.



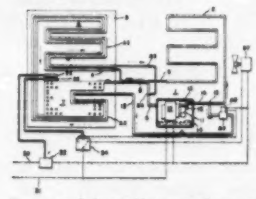
1. Apparatus for cooling and heating separate bodies of fluid, comprising: a thermoelectric structure having spaced hot junctions and cold junctions; means thermally contacting one body of fluid with the hot junctions for heating said fluid; means thermally contacting the other body of fluid with the cold junctions for cooling said fluid; means maintaining the temperature of the one body of fluid substantially constant; and a separate chamber connected to said heated body of fluid to receive heated fluid therefrom preparatory to dispensing the same. . . .

2,928,255. HEAT PUMP SYSTEMS. James R. Harnish, York, Pa., assignor to Borg-Warner Corp., Chicago, Ill.



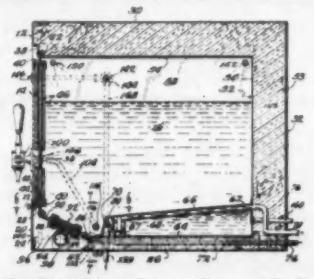
1. In a heat pump including a refrigerant compressor, an indoor heat-exchanger and an outdoor heat-exchanger, the combination of means for defrosting said outdoor heat-exchanger comprising means for staying the operation of said compressor, means establishing flow paths between said heat-exchangers for liquid refrigerant to flow from said outdoor to said indoor heat-exchanger and evaporated refrigerant to flow from said indoor to said outdoor heat-exchanger. . . .

2,928,256. REFRIGERATING SYSTEM INCLUDING AUXILIARY HOT GAS DEFROSTING CIRCUIT. Clyde J. Nonomanque, Louisville, Ky., assignor to General Electric Co., a corporation of New York.



1. In a refrigerating system of the type comprising a compressor, a condenser, a fixed flow restrictor and an evaporator connected in series-flow refrigerating circuit, means for defrosting said evaporator comprising and auxiliary refrigerant flow circuit connected to said refrigerating circuit in parallel refrigerant flow relationship with said fixed flow restrictor and evaporator and including a defrost portion in heat exchange relationship with said evaporator, said auxiliary circuit being connected at its inlet end to said refrigerating circuit between said compressor and said restrictor and at its outlet end to said refrigerant circuit between the outlet end of said evaporator and said compressor. . . .

2,928,257. BEER COOLER AND DISPENSER. Samuel Bovner, Chicago, Henry Morgan, Libertyville, and Horace C. Kreinick, Lincolnwood, Ill.



1. Apparatus for cooling and dispensing a beverage under pressure comprising, an insulating cabinet hav-

Editor's Note: Patents described here have been selected from the "Official Gazette" of the United States Patent Office. They offer only a brief summary of each invention. In some instances only the first part of the digest is presented.

Printed copies of patents, reissued patents, and patent designs may be secured from the Patent Office; patents and reissues are 25¢ each, while designs are furnished at 10¢ each. Address orders to: Commissioner of Patents, Washington 25, D. C.

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BOX A6580, Air Conditioning, Heating & Refrigeration News.

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PRODUCT DEVELOPMENT Engineer—Military refrigerant compressors and air conditioners. A nationally recognized concern in the field of military equipment desires project engineer to assist in the design of equipment and test facilities. This is a real opportunity for the right man. Five years experience in the field of air conditioner and/or compressor design or test is required. Salary commensurate with experience. Full employment benefits. Located in Cleveland, Ohio. BOX A6583, Air Conditioning, Heating & Refrigeration News.

CALIFORNIA—SAN FRANCISCO Bay Area—Air conditioning, refrigeration and appliance sales and service business for sale. Fast growing state—year round activity. Good opportunity—needs strong sales management. Nationally known franchises—complete service facility — trucks — shop — etc. Sales over ¼ million 1959. BOX A6584, Air Conditioning, Heating & Refrigeration News.

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USED AND repairable or new compressors and condensing units above 5 h.p. Also need surplus parts for G. E., Brunner, Copeland, Mills, Worthington, Par, etc. Give full descriptions and part numbers. Don't junk it; we'll buy it. UNITED REFRIGERATION CORPORATION, 514 W. 12th St., Los Angeles 15, California.

EQUIPMENT FOR SALE

ATTENTION REFRIGERATION Servicemen: Send for catalog listing values in refrigeration and air conditioning parts, relays, capacitors, compressors. Savings up to 50%. WALTER W. STARR, 2833 Lincoln Ave., Chicago 13, Illinois.

BUSINESS OPPORTUNITIES

DISTRIBUTORS WANTED: Manufacturer of refrigerated, self-service milk and dairy products cabinets especially designed for school, institutional, and super market use wants additional distributors. Prefer distributors now contacting schools, dairies, restaurants, super markets and similar customers. Choice territories available. DISPLAY-O-MATIC, INC., P. O. Box 338, Bradenton, Florida.

PALM SPRINGS, California — Air conditioning, refrigeration, appliances, sales & service business, well established in fast growing area with air conditioning a must. $12,500.00 includes truck and inventory. BOX A6573, Air Conditioning, Heating & Refrigeration News.

MISCELLANEOUS

HOMEMAKERS REFRIGERATION Guide—Now available to mechanic, salesman and consumer. Use it on service calls or sales floor. Covers refrigerators, freezers and air conditioning. Just say "Guide" and send one dollar cash or check to WASHINGTON HOME SERVICE, 422 Washington Bldg., N. W., Washington 5, D. C.

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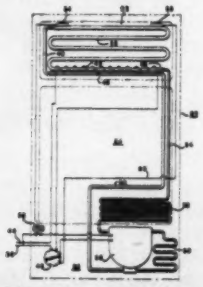
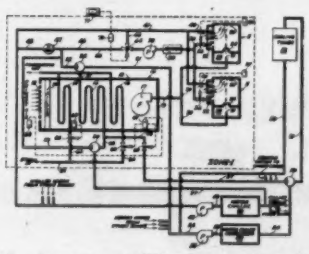
ing an internal metal storage tank for the beverage, said tank and cabinet having a gasketed window assemblage forming a common wall therefor which enables beverage stored in the tank to be visible from exterior of the cabinet, a sealed refrigeration unit supported to form a wall of the tank and means for leading a refrigerant through the unit from a high pressure source of the refrigerant exterior of the cabinet, conduit means connected with said tank for supplying beverage thereto. . . .

2,928,258. EVAPORATOR DEFROSTING MEANS. Leonard J. Mann, Dayton, and John C. Miller, Spring Valley, Ohio, assignors to General Motors Corp., Detroit, Mich.



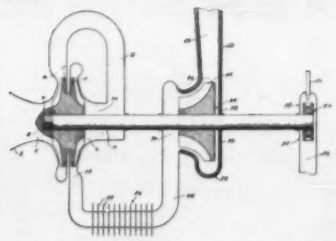
1. Refrigerating apparatus including refrigerant liquefying means and generally vertical sinuously wound evaporating means having a horizontal liquid refrigerant passage portion as the lowest pass in said vertical evaporating means, a defrost heater concentrated substantially entirely along said lowest pass refrigerant passage portion and extending into intimate heat transfer contact with said lowest pass refrigerant passage portion for defrosting said evaporating means. . . .

2,928,260. AIR CONDITIONING SYSTEMS. Robert D. Blum, York, Pa., assignor to Borg-Warner Corp., Chicago, Ill.



1. An air conditioning system for multi-room buildings comprising a plurality of conditioning units located in air communication with respective rooms, said units each including a heat-exchange coil and nozzle means; means for supplying primary air to said nozzle means for discharge through said units into said rooms, said air discharging at a sufficient velocity to thereby induce a flow of room air through said units and over said heat exchange coils in heat-exchange relation therewith; refrigerating means for supplying a chilled fluid year-round to said coils and including a fluid cooled refrigerant condenser; a conditioner for treating said primary air and including a heat-exchange coil; heat dissipating means for said condenser fluid; and means for by-passing said heat dissipating means and for passing said condenser fluid through said conditioner heat-exchange coil. . . .

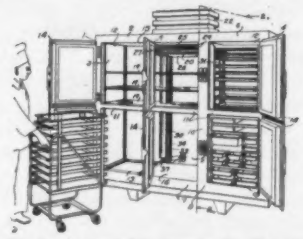
2,928,261. AIR CONDITIONING SYSTEM. Achilles C. Sampietro, Detroit, Mich., assignor to Thompson Ramo Wooldridge, Inc., a corporation of Ohio.



An air conditioning system for cooling a motor vehicle comprising an air intake duct, a rotary air compressor connected to the intake duct and including a rotor and a housing, an elongated drive shaft supporting the rotor, an intercooler having a cooling chamber and cooling vanes and connected to receive air from the compressor, an air turbine spaced axially a substantial distance from the compressor, an air turbine spaced axially a substantial distance from the compressor and out of heat transfer relationship therewith having a housing separated from the compressor housing and a rotor on said drive shaft. . . .

2,928,262. REFRIGERATORS. Chester K. Litman, Kansas City, Mo., assignor to Koch Refrigerators, Inc., Kansas City, Kan.

1. A refrigerator, including a cabing having side and rear walls, a top and bottom and spaced apart pilasters in the front of the casing providing sides of door openings in connection

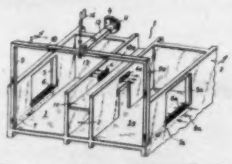


with food storage spaces in the casing, said food storage spaces corresponding in width to the width of the door openings, means providing an air cooling compartment within the upper portion of the casing and spaced inwardly from the pilasters, said compartment having an opening therein in direct connection with the upper portion of one of the food storage spaces. . . .

2,928,280. FREEZING DEVICE POWER UNIT. Arthur J. Frei, Dayton, Ohio, assignor to General Motors Corp., Detroit, Mich.

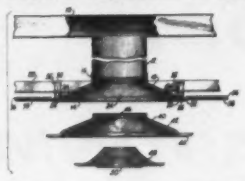
1. An ice-operated motor having reaction members forced to be shifted in opposite directions relative to one another at a predetermined temperature, one of said reaction members having a piston thereon provided with a closed inner end disposed in a bore of the other of said reaction members, said other reaction member having a chamber therein beyond and aligned with said bore containing a freezable liquid exposed to the closed end of said piston in the bore, means surrounding a part of said reaction members forming a seal therebetween for preventing escape of the freezable liquid from said motor. . . .

2,928,330. METHOD AND APPARATUS FOR THE DISTRIBUTION OF CONDITIONED AIR. Otto Heinz Brandl, Koln, Germany.



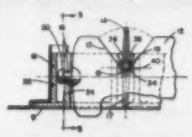
1. In a system of ventilating and supplying preconditioned air simultaneously to a plurality of rooms having windows exposed to different outside air pressures, means for supplying said preconditioned air to the said rooms from a common source and at substantially constant pressure, outlet means in each room for withdrawing the air from the said rooms, a common air exhaust means, a pair of duct means provided with discharge orifices connecting the respective outlet means in the said rooms to the said common air exhaust means at a common junction point. . . .

2,928,331. CEILING DIFFUSER MOUNTING. Eugene F. Averill, Waterloo, Iowa, assignor to Titus Mfg. Corp., a corporation of Iowa.



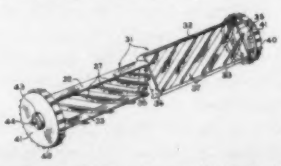
1. Ceiling construction including an air distribution system comprising: an air duct; a vertically disposed conduit extending downwardly from said air duct, rigid ceiling construction below said air duct; and a diffuser mounting member having a neck portion in telescopic engagement with said conduit. . . .

2,928,332. AIR DIRECTING LOUVER DEVICE. Adam D. Goettl, Albert B. Goettl, and Gust Goettl, Phoenix, Ariz.



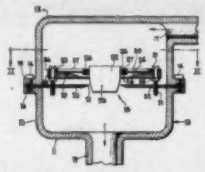
1. In air directing louver device the combination of: a frame; a plurality of first slats individually pivoted in said frame in spaced parallel relation to each other; a plurality of second slats individually pivoted in said frame in spaced parallel relation to each other, said second slats angularly disposed relative to said first slats, each of said first and second slats provided with spaced substantially V-shaped notches having inwardly directed closed notch apex portions, said notches diverging from said inwardly directed notch apex portions to common outer edges of the respective slats, said inwardly directed notch apex portions of said first slats being spaced equal to the spacing of said second slats. . . .

2,928,333. OUTLET GRILLS FOR AIR CONDITIONERS. Shannon L. Madison, York, Pa., assignor to Borg-Warner Corp., Chicago, Ill.



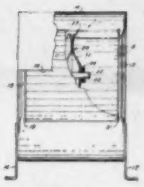
1. In a room air conditioner having an outlet for conditioned air, an air outlet grill for directing the flow of said conditioned air comprising, a pair of frame members, a pair of support members for maintaining said frame members in an assembled, spaced-apart, parallel relationship and a plurality of louvers obliquely mounted in parallel between said frame members and rotated into canted planes with respect to the planes of said frame members, means for mounting said grill in the outlet of a room air conditioner. . . .

2,928,414. CONSTANT FLOW CONTROL DEVICE. Victor L. Streeter, Ann Arbor, Mich., assignor to The Dole Valve Co., Chicago, Ill.



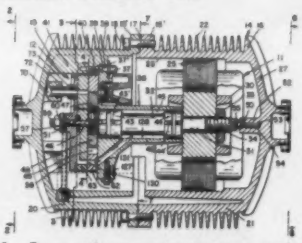
In a flow control device to maintain the flow rate of fluid in a fluid system substantially constant, a housing for fluid flow therethrough, an orifice plate mounted in said housing in the path of flow therethrough and secured thereto, said plate having a substantially knife edge annular orifice therein, a contoured poppet having a profile law. . . .

2,928,587. BLADE CENTER LOCK. Harold A. Austin, Kalamazoo Township, Kalamazoo County, and Clarence H. Guptail, Kalamazoo, Mich., assignors to The Brundage Co., Kalamazoo, Mich.



1. A centrifugal blower wheel construction, including: a plurality of circumferentially spaced, axially elongated blades having inner radial edges parallel with the axis of the wheel, each of said blades having a notch therein between the axial ends thereof, said notch extending outwardly from the radially inner edge of said blade; a T-shaped member within said notch and extending inwardly therein, the ears of said T-shaped member being adjacent the radial inner edge of said blade and extending, respectively, toward the opposite axial ends of said blade; a pair of radially extending center plates. . . .

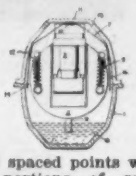
2,928,588. COMPRESSOR. Gustav H. Sudmeier, Torrance, Calif.



1. In a rotary compressor, a motor-driven shaft having an eccentric portion, means forming a cylindrical chamber around the eccentric portion of the shaft concentric with the axis of rotation of the shaft, a cup member on said eccentric portion of the shaft having a cylindrical inner surface and a cylindrical outer surface, said surfaces being eccentric with respect to each other. . . .

2,928,589. HERMETICALLY-SEALED, MOTOR COMPRESSOR UNIT INCLUDING NOISE REDUCING MEANS. Peter E. Davey, Fern Creek, Ky., assignor to General Electric Co., a New York corporation.

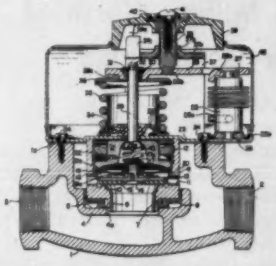
3. A hermetic compressor including a sealed casing, a motor-compressor unit resiliently suspended within said casing in spaced relation with the walls of said casing and means for damping cavity resonance comprising a cloth curtain disposed between said casing and at least the top and sides of said motor-compressor unit, said curtain being fastened only to the top and side walls of said casing at a



plurality of spaced points with the unsupported portions of said curtain draping in spaced relation with said casing and said motor-compressor unit. . . .

2,928,645. POWER ACTUATED SNAP-ACTING VALVE. Roger S. Loveland, Torrance, Calif., assignor to Minneapolis-Honeywell Regulator Co., Minneapolis, Minn., a corporation of Delaware.

3. A flow control device comprising a body, a flow control member positioned within said body, an actuating



plunger rotatably and slidably mounted in said body and having means thereon for actuating said control member in engagement with said control member actuating means. . . .

Plant Vacation Schedule

Shutdowns Starting Aug. 19 or Later

This is the final in a series of handy guides to summer vacation or inventory shutdown schedules announced by manufacturers. It is published to help salesmen avoid useless calls and to assure purchasing departments of adequate stock on hand.

Company	Shutdown Period: Plant	Shutdown Period: Office	Shipments From Plant
Remington Corp., Auburn, N. Y.	8/19-9/6		Stock Only
Refrigeration Appliances, Inc., Chicago	8/20-9/6	8/20-9/6	Emergency
Dunham-Bush, Inc., W. Hartford, Brewster	8/21-9/5		Emergency
La Crosse Cooler Co., La Crosse, Wis.	8/21-9/5	8/21-9/5	Stock Only
McIntire Co., Livingston, N. J.	8/21-9/4	Open	Emergency, Stock Only
Precision Tube Co., Inc.,			
Kramer Trenton Co., Trenton, N. J.	8/22-9/5	8/22-9/5	
N. Wales, Pa.	8/21-9/6	Open	None
Addison Products Co.	8/22-9/5	Open	Regular (to 8/26, none after)
Baltimore Aircoil Co., Inc., Baltimore	8/22-9/5	8/22-9/5	Stock Only
Continental Air Filter, Inc., Louisville	8/22-9/5		
C. Schmidt Co., Cincinnati	8/22-9/5	Open	Emergency, Stock Only
Heat Controller, Inc., Jackson, Mich.	8/22-9/4	Open	Regular
York Div., Borg-Warner Corp., York, Pa.	8/22-8/28	Open	Emergency
Addison Products Co., Addison, Mich.	8/26-9/5	Open	Regular
Larkin Coils, Inc., Atlanta	8/26-9/6	Open	Stock Only
United States Air Conditioning Corp., Delaware, Ohio.	8/27-9/5	8/27-9/5	Emergency
Lindustries, Inc., Fort Worth	10/1-10/16	10/1-10/16	Regular
Tyler Refrigeration Corp., Niles, Mich.	10/31-11/2	Open	Regular
Council Mfg. Corp., Fort Smith, Ark.	12/23-1/2		Emergency, Stock Only

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IMPORTANT: Company's Type of Business.....

Charge Detroit Builders--

(Continued from Page 1, Col. 4)

Stringari, Fritz & Dunn, representing some 350 subcontracting firms, last week turned over 38 complaints to William P. Long, chief of the prosecutor's criminal fraud division, who will conduct the investigation.

"I can have a lot more for you any time," Fritz told Long.

Fritz asserted that often, the builder has dodged responsibility by going into bankruptcy, and then later resumed building and sharp practices by forming a new corporation. Fritz said his associations are receiving as many as 30 complaints a day from irate homeowners.

Declaring that some of these builders "make a business out of bankruptcy," Fritz told Long: "Many of them operate several different firms at the same time. They go bankrupt in one firm, cheat the subcontractors, and continue in business in another firm."

These crooked builders, Fritz said, comprise about 2% of the industry. As a result of their operation, he charged, the cost of homes to buyers is increased.

In addition to the Better Heating & Cooling Bureau, Fritz said his law firm represents the Poured Concrete Wall Association, Michigan Dry Wall Contractors, Michigan Roofers' Association, Michigan Wood Floormen's Association, and the Concrete Contractors Assn.

Fritz said the associations have done repairs free in some homes, although they were not legally required to do so, and the subcontractor was never paid by the original builder.

Long said during a meeting of five persons representing contracting and mortgage interest that he intends to "take a good hard look at these alleged violations of the Builders' Trust Fund Act. There will be a hearing on each complaint in due time."

Asserting that 99% of the Detroit area builders "are honest, reliable, and sincere businessmen," Craig Smith, vice president of Sullivan-Smith, Inc., Dearborn builder, stated:

"This is a black eye for the industry. The entire industry is hampered by this practice. The subcontractor should be protected because he is the lifeblood of the industry."

Subcontractors have maintained that the expense of filing liens on property to collect bills wipes out profit. In many cases, according to Fritz, builders insist on waivers of lien from subcontractors as a condition of employment.

Under state law, subcontractors must file notice of intent to obtain a lien within 60 days of starting work. Final action for a lien must be sought no more than 60 days after work is completed.

Fritz noted that his firm had written a letter of complaint last January to the Michigan Corporation & Securities Commission but had not received a formal reply. He said, however, that Commissioner Lawrence Gubow had told him that the law was too weak to permit prosecution.

He was also told, Fritz said, that the commission did not have the power to prohibit a builder from obtaining a license to operate after going bankrupt.

Crane Confirms Miami Purchase--

(Continued from Page 1, Col. 3)

part of the assets of five competitors, including National-U. S. Radiator Corp., within the past two years.

Crane denied the charges and requested dismissal of the complaint. It declared that the acquisitions "encouraged competition and benefited the public." Crane's answer further contended that some of the acquired companies "were incurring losses and were in failing circumstances."

Early in May, Crane announced that it had purchased the fixed assets and inventory of General Air Conditioning Co. of Los Angeles. It said the West Coast firm would be operated as a division of Crane's Plumbing, Heating & Air Conditioning Group.

Later in the month, Crane sold the assets of its Viking Air Products division to Lau Blower Co. Viking had been acquired by Crane last February as part of National-U. S. Radiator.

Meanwhile, Crane got involved in a legal hassle with Briggs Mfg. Co. which it was trying to acquire. In one development in this matter, Briggs management filed a million-dollar damage suit against Crane, charging the latter with violating the anti-trust laws by purchasing Briggs stock.

Harold T. Mattern Retires

DAYTON — Harold T. Mattern, one of the top sales executives of Frigidaire Div. of General Motors Corp., has retired from active service after more than 38 years with the company.

Florida Campaign Sells $1 Million Worth of Air Conditioning

MIAMI, Fla.—Air conditioners account for nearly $1 million of the $1,054,000 volume in cooling equipment (including fans) sold during May in the territory of the Florida Power & Light Co.

May was the first month in a four-month campaign in which the utility is promoting sales through the slogan "Enjoy Cool Comfort—Electrically."

Air conditioner sales to dealers of 3,699 units during the month represented 18% of the campaign quota of 20,000 units. In a similar campaign last year 5,163 units were sold in May.

During the first five months of 1960, 15,003 air conditioners were sold compared with 18,308 in the same period last year.

These figures represent sales by wholesalers to dealers plus retail sales by department and chain stores and some retailers who purchase their merchandise from sources other than Florida wholesalers.

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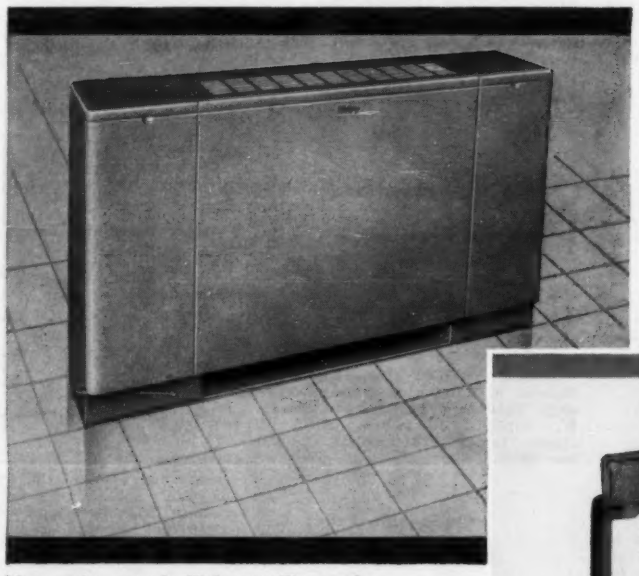

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